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DIESEL RAILWAY TRACTION

The December issue of this RAILWAY GAZETTE *Publication, illustrating and describing developments in Diesel Railway Traction, is now ready, price 2s.*

Transport Administration in Tropical Dependencies

By George V. O. Bulkeley, C.B.E., M.I.Mech.E.
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British Transport Commission Rolling Stock Orders

ONE of the questions which has exercised the minds of the private rolling stock building industry has been the procedure which the British Transport Commission will adopt in the manufacturing of locomotives, carriages, and wagons. At one of the recent press conferences held by the British Transport Commission to explain the broad lines of its organisation, Sir Cyril Hurcomb, the Chairman, was asked whether under the new *régime* the railways would go fully into manufacturing processes. Sir Cyril Hurcomb replied that it was important to see that the outside trade, which has to live in the export market, got some share of the home orders, and the railways had that in mind in the past. He added that it should be possible, once the abnormal circumstance of the present were left behind, to lay down a programme of construction rather further ahead and give manufacturers a share. They could then see what was planned. Much would depend on the price and the state of employment in the railway shops, and a number of other circumstances. He added, however, that the Commission would not want to make a radical alteration in policy or deprive outside manufacturers of a reasonable share of orders for the unified undertaking.

* * * *

"The Administrative Function"

Mr. F. A. A. Menzler's observations during the discussion at the Institute of Transport on November 10, on Mr. F. A. Pope's paper, "Principles of Organisation for Large Undertakings" (see our November 14 and 21 issues), have attracted considerable attention. It will be recalled that his main contention was that a Headquarters, organised as Mr. Pope had proposed, on a functional or specialist basis, is not suited, in a very large undertaking, for performing the vital non-specialist function of deciding new policy on major issues. As he put it: "Whose is to be the specific job of doing the hard non-specialist thinking that prepares the way for an integrated judgment?" This function, he argued, should, as in the Civil Service, be the concern of a separate administrative division at Headquarters, reporting directly to the Chairman. Mr. Menzler's general argument has since been applied, with acknowledgments, by *The Manchester Guardian* to the particular case of the new organisation for British Railways announced last week. *The Economist* and *The Financial Times* have also taken the same point. Both journals emphasise the specialist constitution of the Railway Executive. *The Economist* asks who is to do the thinking necessary for collective decisions, and suggests that the gap might be filled "by setting up an advisory or secretarial body working in apposition to the Chairman."

* * * *

Indian Wagon Turn-Round

The article by Sir George Cuffe, General Manager, Bombay, Baroda & Central India State Railway, which appears on page 637, describing the efforts made on the India railways to improve wagon turn-round, is particularly interesting in view of the campaign recently inaugurated on the British railways. The desirability of some accurate statistics showing the average turn-round of wagons on British railways has been urged recently, but, although the method mentioned by Sir George Cuffe has the merit of simplicity, it is open to the criticism that the estimated wagon turn-round time would increase as the traffic decreased and *vice versa* which, as Euclid said, is absurd. Obviously, as Sir George Cuffe states, such a method is applicable only when the demand for wagons equals or exceeds the supply, and it is valueless when traffic fluctuates to any material degree. The only accurate way of obtaining an overall average transit time for loaded wagons would be from the wagon labels over a given period, always assuming that the date of dispatch corresponded with the date on the label. This would be no mean task, as some 750,000 wagons are dispatched weekly. This process would have to be repeated at intervals if comparable figures were desired, and even then the resultant statistics would be of doubtful value by reason of variations in the nature and flow of traffic, operation conditions, weather and other circumstances, and it would be practically impossible to compute the average transit time of empty wagons so as to obtain the total turn-round time.

Export Targets and Material Supplies

Because some misunderstanding has arisen on material supplies for export manufacturers working to export targets, Sir Stafford Cripps has issued an explanatory statement. This points out that many component suppliers, sub-contractors, and others who do not export directly have been anxious to establish their export contribution by reference to their indirect exports, and potential customers and main contractors have received a large number of inquiries. In the case of end-products, such as machine tools or vehicles, which go straight into use without further processing, the approved programme for each manufacturer will lay down the proportion to be sent abroad, and in determining the share for home use the Government will have taken into account the part played indirectly in the export drive. So long as the balance is maintained, the manufacturers of end-products will receive material allocations for both parts of the programme. In the case of component and common-service items, such as ball bearings and electric motors, which are incorporated in a number of end-products both for export and home use, material allocations will be determined by the Government's assessment of the level of supplies required to meet the programme controlled at the end-product stage. Similarly, control as it affects sub-contractors will be through the end-product.

* * * *

A.T.C. on L.M.S.R. Southend Line

Automatic train control on the Hudd intermittent inductive system was brought into use at 110 distant signal locations between Bow and Shoeburyness, L.M.S.R., on December 1. Extensive full-scale trials of the system have been in progress since before the war, and the apparatus was described in our August 12, 1938, issue. One permanent magnet and one electromagnet, 15 yd. apart, are associated with every distant signal. The permanent magnet, by inductive action with a receiver on the locomotive, opens a horn valve and begins a brake application. If the signal is "off," however, the electromagnet is energised, which has the effect of silencing the horn and suspending the brake application. The driver himself can silence the horn and retain full control of the braking provided he acknowledges a warning within 3 sec. of its being received. Although there is a clearance of 4 in. between the track magnets and the locomotive receiver, laboratory tests have proved that the inductive link is effective at any speed up to 120 m.p.h. The special safety equipment has been fitted to 183 locomotives, and on account of the ample clearance between the receiver and rail level, it is possible for engines so equipped to work over any section of line, including those with a conductor rail. For the first time on a British railway with A.T.C., fogsignalmen are being dispensed with on the section now equipped.

* * * *

An Accident under "Stop and Proceed"

Lt.-Colonel E. Woodhouse's report on the accident at Stratford, Central Line, L.P.T.B., a summary of which appears in this issue, places the responsibility on the motorman for failing to drive with the care and caution called for by the circumstances and the rule governing the passing of automatic signals at danger. In principle this accident does not differ from the others which have occurred from time to time and whatever the circumstances on any railway which may necessitate a signal being passed at danger, the final responsibility for safety thereafter must remain with the driver. In this case there were other persons, of the Signal Engineer's staff, in the driving compartment, proceeding to the scene of the failure, and the jury at the inquest expressed the view that not more than one authorised person should be permitted to do this. Colonel Woodhouse considers such a prohibition unnecessary, as at times more than one person may be required to travel with a motorman, and that there is no evidence that any distracting conversation took place. The jury also made a recommendation on speedometers, but Colonel Woodhouse emphasises that looking out carefully ahead is much more important than referring to a speedometer, itself of no very great value at the slow speed demanded when a signal has been passed at danger.

Railway Executive Functions

THE British Transport Commission has now issued its scheme of delegation of functions to the Railway Executive, accompanied by a short explanatory memorandum. This points out that on and after January 1, 1948, the Government Control of the railways, which began with the Emergency (Railway Control) Order, 1939, will come to an end. The four main-line railways, together with the various joint lines and small railways, including subsidiary undertakings such as the railway-owned steamships, docks, and hotels, will, under the Transport Act, pass into the ownership of the British Transport Commission.

Having regard to the size of the Commission's undertaking and to the varying types of transport involved, the Act provides for the setting up of bodies called Executives, whose functions are to assist the Commission as its agents for the purpose of operating the various parts of the Commission's undertaking under a scheme of delegated powers. It is at present contemplated that there will be an Executive for each of the following:—

Railways;
London Transport;
Docks & Inland Waterways;
Road Transport;
and (from a date to be fixed) Hotels.

These Executives will derive their powers from schemes of delegation made by the Commission with the approval of the Minister of Transport, and will be responsible to the Commission, whose agents they are. The Commission remains the legal owner of the various transport undertakings vested in it under the Act, or acquired by it under the provisions of the Act. It is the policy-making and financial body, responsible for establishing and maintaining proper co-ordination between the various Executives, and has a duty to ensure that each Executive carries out efficiently the duties delegated to it in its particular sphere of operations. To these ends over-riding powers of direction are conferred on the Commission by the Act.

On the other hand, an Executive will, within the scope of its particular scheme of delegation and subject to any directions by the Commission, exercise all the powers of the Commission relating to the functions with which the Commission has entrusted it.

By the scheme now published the Commission has delegated to the Railway Executive its functions in relation to the undertakings formerly carried on by the four main-line railway companies, including their steamships and, for the time being, their other ancillary businesses such as docks and hotels, and provision is made to enable the Railway Executive to exercise in relation to these functions the statutory powers already possessed by the companies in connection with the existing undertakings, and any additional powers conferred on the Commission by Section 2 of the Act. The scheme may also apply to additional undertakings and activities if an instrument is at some future date executed for that purpose.

The Commission has, however, reserved to itself certain specific functions, including the promotion of Bills in Parliament, the issue of stock, the making of reports to the Minister, and the making of charges schemes under Part V of the Act. The Executive will not have powers to acquire undertakings, or to borrow money, nor any power to hold investments. Provision is made in the scheme for its subsequent variation by means of an instrument (as, for instance, if the Commission decides that a canal or dock belonging to a railway undertaking today is at some later date to be managed by another Executive), and the scheme is to come into force on January 1, 1948.

Generally, the effect of the scheme will be that the Railway Executive will be responsible for the day-to-day operation and management of British Railways, and in this sphere is accorded wide discretion. The users of the railways, whether passengers or traders, will deal with the Executive, not with the Commission. For example, all claims will be dealt with by the Executive; it will be the employer of the staff; and it (not the Commission) will sue and be sued on all matters of dispute arising within the scope of the scheme of delegation. The Commission, however, retains control of policy and finance,

and its power to issue specific directions on such matters as it thinks fit to deal with from time to time in this way.

* * * *

Railways and Capital Investment Cuts

THE White Paper* issued by the Chancellor of the Exchequer at the beginning of this week sets out the Government's plans for bringing the volume of new investment undertakings into relation with the reduced supplies of materials, industrial capacity, and manpower that the country can afford to make available for this purpose. At last an attempt has been made to calculate in broad terms the amount of steel and timber available, the number of workers who can be spared from work for the export markets and for home production, and the extent of the productive capacity of the nation which can be allocated for capital works at home. In brief, the rate of total gross investment expenditure, including repair and maintenance, is to be reduced for the calendar year 1948 to £130 million a year below the recent annual rate. By the end of 1948 the rate of expenditure is to be £230 million below the present rate.

The White Paper puts the total employed at June, 1947, in transport at 17,055 persons, and the maximum set for that labour force for June, 1948, at 10,000. This labour force of 10,000 for transport will cover contract works for roads, railways, and ports, but a large part of this will be devoted to the railways which have more urgent works. In addition to the demands on the general pool of building and civil engineering labour covered by this figure, the railways employ 20,000 on building and maintenance. A common practice is to call on outside contractors only for major new works and substantial alterations.

The railways have started, or have in view, a number of projects costing more than £100,000. Some are essential to main industrial traffic, some are needed to handle heavy increases in passenger traffic in recent years, some have proceeded a long way and should not be postponed, and there are portions of others to be deferred, and some which the White Paper states may be postponed altogether for the time being. Examples are given of those which fall in the various categories, which so far as concerns works which it is intended should proceed, and the reasons which have weighed with the Exchequer, are as follow:—

Manchester-Sheffield Electrification (estimated cost £6,200,000). This scheme will increase the capacity of this important cross-Pennine route, 60 per cent. of the traffic on which is coal. It will allow of quicker turn-round of locomotives and wagons and save 100,000 tons of coal a year, while releasing 180 steam locomotives.

Woodhead Tunnel (estimated cost £2,500,000). This tunnel is located on the above-mentioned route, and age and structural defects make replacement necessary.

East and West Extensions of Central Line, L.P.T.B.: Shenfield Electrification, L.N.E.R. (estimated cost £17,000,000). This work is from half to three-quarters complete; it is badly needed for increased traffic which is now handled only with great difficulty.

Examples of works which are not to proceed for the present are:—

Notting Hill Gate Reconstruction, L.P.T.B. (estimated cost £600,000). This scheme constitutes the first stage of a road widening which has been deferred.

Euston Station (*Rebuilding*) (estimated cost £4,000,000).

The White Paper points out that the railways' own building labour force of 20,000 is largely engaged on day-to-day maintenance and small works. These works are being reduced to a minimum by postponement, and all possible use is to be made of the permanent staff on larger new works which must proceed.

So far as concerns ports and harbours, the programme for 1948 included all projects of over £100,000. Some are essential to ease the handling of goods or hasten turn-round of ships; examples are transit sheds at Bristol (£111,000), Glasgow (£430,000), and Liverpool (£1,100,000). Other projects which are less likely to produce early returns are to be postponed. Examples are deep-water quays at Leith (£600,000) and reclamation and deepening works at Hendon River Wear (£312,000).

* "Capital Investment in 1948." Cmd. 7268. H.M. Stationery Office. Price 6d.

Last "Great Railway" Secretary

THE Great Western Railway is now in its death throes, or shall we say passing peacefully to its end. It was the only one of the "Great" railways to survive the 1923 grouping—when its lesser brethren the Great Northern, Great Eastern and upstart Great Central all ended their careers as statutory companies. Mr. F. R. E. Davis, who some time ago made up his mind that he would retire at sixty, has not waited to be in at the death. He retired from the secretaryship of the company on November 30, after occupying that post with distinction for nearly 22 years. Regret at his departure and good wishes for his long and happy retirement will be widespread.

The relative importance of any high office on a British railway has in the past depended to a great degree on certain innate qualities of the holder of that office, in other words, what he made of it. Since the company's foundation, the Secretary's Department of the Great Western Railway has ranked highly in its organisation. The public associate the inception and building up of the Great Western with two famous engineers, Brunel and Gooch. But without its first Secretary they could have done nothing. When, in 1833, the railway was first projected and governed by two boards of directors—one in London and the other at Bristol—Mr. Charles Alexander Saunders was appointed Secretary to the former one. After the line had been constructed the two boards were amalgamated and Saunders was appointed Secretary & General Superintendent of the railway as a reward for the very marked ability, tact, and "general utility" he had evinced in the development of the scheme. It was not until 1863 that the Great Western's first General Manager, James Grierson, was appointed

In 1935, when the Great Western Railway Company celebrated its centenary, it was Mr. Davis who conceived the film telling the story of its first hundred years. Thus it fell to the last Secretary to tell the story of the first. Perhaps it was reading what happened to the first Secretary that made the last Secretary make his mind up to retire at 60. Saunders wore out his life in the many hard struggles he made for the Great Western Railway, and early in 1863 he wished to retire in consequence of failing health. At that time the directors had a most important Bill in Parliament for the amalgamation of the West Midland with the system, and they begged him to stay and help them through with the measure. He loyally stayed to fight the battle and was successful in so doing. He resigned his position in September, and died a year later, when 67 years old. In one respect the last Secretary is a wiser man than was the first. He has other interests besides the railway. In his spare time he qualified for the Bar and became a member of Gray's Inn. He is a Fellow of the Surveyors' Institution, a Fellow of the Royal Economic Society, and a Fellow of the Auctioneers' & Estate Agents' Institution. He was President of the Chartered Institute of Secretaries in 1932. An officer in the Royal Naval Air Service in the first world war, in the second as Lt.-Commander, R.N.V.R., he was a district officer for pre-service training of Naval Sea Cadets, and raised and commanded the Kensington Sea Cadet unit. Last, but not least, he was Mayor of the Royal Borough of Kensington from 1945 to 1947.

* * * *

Wagon Round Trips

EXCELLENT publicity has been obtained in the press and through the medium of the B.B.C., for the campaign to expedite the unloading of wagons, and we understand that the railway trade unions willingly agreed to co-operate in the effort. It should not be overlooked, however, that throughout the war the British railways made a special feature of week-end clearances, and that the present effort owes its origin to the combination of the effects of the five-day week in industry and the coal mines, and the decrease in the number of wagons available, because of the inability of the railways to obtain sufficient men or materials to enable them to overtake the arrears of maintenance which accumulated during the war.

Similar considerations apply to the 400,000 or more coal wagons belonging to private owners, which were requisitioned by the Ministry of Transport at the outbreak of war, as, despite the achievement of a record output of repaired wagons, until

recently a larger number of wagons was falling out for repairs. Strenuous efforts have been made throughout the year to increase the repairing facilities, by the railways and wagon repairers generally. As the result, we understand that the number of wagons requiring "light" repairs is being reduced steadily to more manageable proportions, but overtaking the arrears of heavy repairs is likely to be a problem for some time to come. The indications are, however, that the peak has been passed and more wagons should become available gradually for traffic weekly throughout the winter.

Gratifying though this expectation is, there is still clearly the greatest necessity for wagon turn-round to be accelerated, having regard to the expected increased requirements of the coal and iron and steel industries, if the flow of general merchandise traffic is not to be impeded. At the moment this latter class of traffic appears to be running at rather less than last year's figures, when fairly extensive restrictions had to be applied to its acceptance, and the present welcome freedom from restrictions is an indication of more fluid movement. The difficult period will occur during the next three months, when operating conditions are not so favourable, and every wagon-day saved will be of vital importance to industrialists, whether they are manufacturing for the home or export trade.

It was announced last week that Lt.-General Sir Wilfrid Lindsell, who has a distinguished war service and who organised several large-scale movements of men and supplies during the war, is to be Chief Executive of the Winter Transport Executive Committee and will be actively concerned in the drive to secure the quicker turn-round of railway wagons. No previous reference has been made to this Committee which, we understand, was formed by Sir Stafford Cripps, but as the present wagon clearance campaign has already been organised and put into effect by the railway companies, the Railway Executive Committee and the newly-formed Railway Executive, it is to be hoped that there will be no duplication of effort.

The campaign has certainly made a good start, but it remains to be seen whether the railways, who are handicapped by shortage of locomotive crews and locomotive shed staff, will be able to take full advantage of the additional supplies of empty wagons by distributing them promptly.

We notice that *The Times* of December 1, in commenting on week-end clearances, speaks of "turn-round" when unloading or "discharge" of wagons is meant. In strict phraseology, "turn-round" signifies the time occupied in wagon round trips.

* * * *

Chief Regional Officers

THE reaction of the British press to the announcement of the organisation to be established on January 1 by the British Transport Commission for the control of the railways has been remarkable for the unanimity with which it has expressed scepticism of the wisdom of the chain of functional responsibility which is to be set up. The misgivings we voiced in our last week's issue when commenting on the Commission's statement have been echoed and, indeed, often elaborated, in practically all responsible sections of the press. It is abundantly evident that the scheme of organisation for the railways has not engendered confidence that there will be any gain in administrative efficiency under nationalisation. Rather, the view is widespread, despite Sir Cyril Hurcomb's assurances to the contrary, that there will be a strong tendency towards over-centralisation of responsibility, the sheer weight of which may well prove stultifying and must make for delay in the reaching and implementation of decisions, and a remoteness in control which are all too clear in the case of the apex of another great nationalised industry—the Coal Board.

It is the joint facts that the members of the Railway Executive are to be encumbered with functional responsibilities, that their chain of contact will be directly with their parallel functional regional officers, and that the Chief Regional Officers will, or may, be by-passed on many major matters, such as "responsibility for the administration of the regions, as well as for co-ordination standardisation, and other questions of principle" which will remain with the Executive, which have aroused most disquiet.

The position of the Chief Regional Officers, indeed, would seem to be both unenviable and ambiguous. They are to co-ordinate the work of the other regional officers (who, presumably, will be receiving "functional" instructions direct from the relative member of the Executive and reporting directly to him), and will have the responsibility of securing that the policies laid down and the general instructions issued by the Executive are made effective. But unless the policies and instructions are of the most general kind, they will be treated in the direct line between the functional member of the Executive and the functional regional officer, and the Chief Regional Officer can only come into the picture at the risk of breaking the chain of communication laid down, and of being accused—from either above or below—of interference.

He is also to have the "rights of initiative" (presumably not in any of the matters vested in a functional Executive Member) "and general oversight necessary to secure that the administration of his region is carried on economically and efficiently, and with due regard to safety of operation." But here again it seems obvious that his exclusion from direct contact with functional matters must result in applying a strong curb, not only to initiative but to any practical steps he may desire to take. Without power it is fruitless to accord responsibility, and the authority of the Chief Regional Officers are singularly ill-defined.

The best that can be said is that the first Chief Regional Officers are drawn from men who hold high office at the present time and that their personal prestige may help them to overcome the disabilities inherent in their instrument of appointment to their new offices. On a longer view, however, there seems good ground for foreboding as to the workability of the system.

The functional responsibilities laid on each of the members of the Railway Executive would seem to be so great as to absorb to the full the time and energies of every one of them, and inevitably the doubt arises as to what consideration can be given to matters of broad administrative policy, or to co-ordination. Presumably, this task must fall largely on the Chairman, whose work must be the more onerous because his colleagues will all be absorbed in departmental and specialist matters and because the well established commercial principle, that administration of large-scale organisations must be largely a non-specialist function, has been discarded. In dealing with this point, and expressing their doubts as to its wisdom—doubts in which we concur fully—both *The Manchester Guardian* and *The Financial Times* suggest that the functional system may have been inspired by the Ministry of Transport, for it is known to accord with Civil Service ideas of administration. *The Economist*, which is also critical, comments that undue prominence has been given to the central functions of technical supervision, and too little weight to the general functions of management.

* * * *

Workmen's Tickets

AS recently forecast in these columns, the re-arrangement of hours of work in industry for the purpose of spreading the industrial electricity load has given rise to difficulties in connection with the issue of workmen's tickets. These tickets generally are issued between specified points where a demand exists for *bona fide* workmen regularly travelling, and coming within the category of artisan, mechanic or labourer, these being the persons to whom the railways are under a statutory liability to issue such tickets.

In practice, however, the tickets generally are issued to any person travelling by trains due to reach the passenger's destination not later than 8 a.m. or, in certain cases, by trains due to leave up to 7.30 a.m. or thereabouts. Before the war, workmen's tickets were also issued outside the normal hours, on production of a ticket of identity, to artisans, mechanics, and labourers required to work on alternating shift turns of duty in respect of afternoon or night working, or regular turns of duty commencing in the afternoons or at night.

As the result of consideration being given to conditions arising from the alteration in the hours of work adopted this winter, the Minister of Transport decided that, as from October 20 last, arrangements were to be made for workmen coming within the categories of artisans, mechanics, and labourers who were required, as the result of altered hours of work to assist in spreading the electricity load, to obtain workmen's tickets for use between the time that their issue

normally ceases and noon. For this purpose a special card of identity had to be obtained from the railway or L.P.T.B. and completed by the employer. Having regard to the difference in the relative wage levels of these classes of workers and other classes of workmen, clerical, supervisory and other staff, this concession occasioned wide representations for a similar concession to be granted to all passengers whose working hours have been altered consequent on the introduction of staggering schemes designed to spread the industrial electricity load.

It will be obvious that any general concession enabling workmen's tickets to be obtained at any time of the day would lead to a demand that workmen's tickets should be issued at any time to those unable to take advantage of the normal workmen's facilities. This would involve the loss of a very large sum of revenue, and probably create a fairly serious operating problem in so far as it might lead to many additional people travelling during the morning and evening rush hours. On the other hand, the Government, in the national interest, could not risk any staggering of hours schemes being prejudiced by workpeople unwilling to adopt them because of the consequent loss of the workmen's ticket facility.

Accordingly on December 1 the Parliamentary Secretary to the Minister of Transport, announced that, purely as a temporary measure during the continuance of the present national needs, particularly that of spreading the industrial electricity load, workmen's tickets would be issued outside the normal hours, from the earliest practicable date, on production of a card of identity, issued by or authorised by the railways or L.P.T.B. and signed by the workmen's employer, to workmen coming within the category of artisans, mechanics, or labourers, who are required to work shifts or regular turns of duty commencing at any time of the day. Workmen's tickets will also be issued to other workers if they are required, as a consequence of approved arrangements to spread the power load, to travel outside the normal hours of issue of workmen's tickets and, previously to the introduction of the arrangements to spread the power load, their days and hours of duty were such that they could avail themselves of workmen's tickets issued during the normal hours of issue. For this purpose a special card of identity will be necessary. Requests for these cards must be made by the employer to the railway concerned, or to the L.P.T.B., which will require evidence that the workers concerned comply with these conditions.

"Wagon Turn-Round"

By Sir George Cuffe

*General Manager, Bombay, Baroda & Central India Railway**

IN view of the present drive to improve wagon turn-round on British railways some notes on what was done in India in the war may be of interest. At the beginning of the war Indian railways owned rather under 150,000 broad (5-ft. 6-in.) gauge wagons and the total annual net ton miles moved amounted to over 21,000 million. It is admitted that Indian conditions varied widely from those in this country; most Indian main lines would not be considered to be intensively worked by British standards and the average haul in India is very much longer. Again, standard four-wheel wagons are of 21-ton capacity or over, so that a much smaller number of wagons is needed for a given quantity of traffic than would be required here.

Before the end of 1940, war conditions began to cause the tonnage moving on Indian Railways to mount steadily and wagon shortage became a serious problem. It should be noted that there were no private-owner wagons in India and that, ever since the 1914-18 war the whole of the broad-gauge goods stock, except for departmental wagons and a limited number of special types, had been "common user"; the allocation between the various systems was controlled under orders from the Director of Wagon Interchange at Delhi. The Indian railways could not therefore improve their wagon availability, as the British railways did, by putting into the "pool" many thousands of wagons previously confined to specified traffic.

The following are some of the steps taken to improve wagon utilisation and so to enable more traffic to move.

1. Control Office working was overhauled, with a view to the improvement of goods train ordering and running. Considerable improvement was effected on some railways, but as it was found that the average wagon spent only five to six hours out of the 24 attached to a train, goods train acceleration could not by itself greatly improve wagon availability.

2. Loading of coal and mineral traffic to the extent of one ton in excess of marked carrying capacity was allowed—in fact encouraged. This undoubtedly led to an increase in the average wagon load, but at a price. There was an increase in the number of accidents caused by journal fractures, and other failures arising from a combination of deferred maintenance and persistent overloading.

3. A "keep wagons moving" publicity campaign was started, and carried on throughout the war. This did some good, and not only amongst railway staff; at least a proportion of the railways' customers began to realise that "warehousing in wagons" was a serious civic offence.

4. In addition to the publicity campaign, free loading and unloading time was cut down wherever feasible and demurrage penalties were more vigorously imposed.

5. Each railway had its own system of recording and watching wagon movement, both at the head office and also at divisional or district headquarters. These systems were overhauled and extended and, generally, greater attention and study were devoted to the day-to-day movements and distribution of wagons. On some railways the whole system of stock reports was revised so as to ensure that accurate and up-to-the-minute information was always available. Action was also taken to guard against congestion: loading to important terminals and *via* interchange junctions was restricted to agreed daily quotas: traffic moving towards the larger terminals and military depots was also carefully watched and loading was partially or entirely restricted, if congestion and delay to wagons was likely to become serious. These steps, perhaps, contributed more than anything else to improving utilisation.

6. Indian railways already produced, before the war, fairly complete operating statistics. Much attention was devoted during the war to the speeding up of compilation. One railway, the South Indian, distributes very complete printed monthly operating statistics only 12 to 15 days after the end of the month concerned, and at least two other Indian railways are not far behind this record. The statistics prepared by each railway vary, but all include those most important items "wagon-miles per wagon-day" and "net ton-miles per wagon-day," for the whole system and also for each division or district. These statistics are generally studied by the staff down to a fairly low subordinate level and form a valuable source of inter-divisional rivalry. One railway, as early as 1940, printed as a slogan in its weekly notices:—

"Each wagon-mile per wagon-day
Helps to keep the Hun at bay."

It has, however, not been found possible to produce these statistics more frequently than once a month, and therefore, although they provide an invaluable efficiency index for the month's working, something else is needed to give a day-to-day measure of wagon utilisation. For this purpose some Indian railways use a "wagon turn-round" figure. Literally, wagon turn-round means the average time that it takes for a wagon to go through one complete cycle of loading, movement to destination, unloading, and movement to next point of loading. This figure can be easily and quickly arrived at each day. If the total number of wagons on the railway on the day in question is divided by the sum of the number of wagons loaded on the railway and the number of wagons received, loaded from other railways, the result is the "wagon turn-round" time in days. The day-to-day trend of this "wagon turn-round" figure gives a useful general indication of how wagon movement and utilisation is progressing. It should, however, be noted that this applies only when the demand for wagons equals or exceeds the available supply. If a railway is holding large numbers of spare wagons the "turn-round" figure becomes meaningless.

* Sir George Cuffe is at present in England on retiring leave.—ED., *R.G.*

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Scottish Railways and "Grouping"

61, Rupert Street,
Glasgow, C.4. November 25

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—With reference to Mr. R. E. Muirhead's letter to *The Scotsman* on Scottish Railways, I feel I must protest at the ridiculous attitude adopted by your correspondent—name not stated—in "The Scrap Heap" of November 7.

We are informed that the Forth Bridge was only 30 per cent. Scottish owned; what of it? Was not Carlisle as much a Scottish railway centre as English? The Caledonian was joint owner with the London & North Western of the Citadel Station, and the Caledonian, Glasgow & South Western, and North British all possessed locomotive depots at Carlisle. To state that there would have been no decent trains out of Waverley if it had not been for the East Coast and Midland-N.B. joint stock is nonsense.

The North British corridor coaches built in 1906 were ahead of most contemporary English stock, and were equipped with hot water in the lavatories. Precisely what bearing the running powers of the East and West Coast companies has on the subject I am unable to gather.

Your correspondent cites Berwick Station as being a disgrace; I rather fancy a few stations in England, both pre-grouping and post-amalgamation, could be put in this category, and it is no exaggeration to say that the average main-line terminus of the Scottish lines was far ahead of the English.

We are informed that the North British had not the engines to work the East Coast through trains beween Berwick and Edinburgh last century. It would be much nearer the truth to state that the finest locomotive work ever done over this section was when the North British engines were responsible for handling the trains.

It is not too much to say that at the date of the grouping, the Scottish railways all round were ahead of the English companies; moreover, the standard of maintenance of our locomotives was unexcelled by any English railway and equalled only by a few of the smaller lines.

Yours faithfully,
MONTAGUE SMITH

Engine Shed Roofs

Chief Engineer's Department,
L.M.S.R. Headquarters,
Watford, Herts. November 26

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Mr. Bell, in his letter in your issue of November 21, raises a number of points with regard to the roundhouses which have been constructed recently by this company.

While the L.M.S.R. has carried out experiments in the use of concrete for engine shed roofs over a long period, the adoption of this material on a large scale is due to war conditions. The schemes were developed and work commenced during the war, when, under the conditions then prevailing, precast concrete offered the following advantages:—

(*a*) minimum use of material in short supply;
(*b*) maximum pre-fabrication;
(*c*) minimum site labour.

The weight of this type of construction is not necessarily a disadvantage. The total weight of precast concrete used in the roof of a roundhouse with 32 stalls is 3,600 tons, which includes 195 tons of reinforcing steel.

The relative merits of straight and round houses is a matter of controversy, and the decision to adopt the latter was made by the Operating Department, as this type more nearly met its requirements.

The main reason for leaving the turntable uncovered was the difficulty in providing a roof over the large area involved. The nearest supports are on a ring 112 ft. dia., and although your correspondent suggests that provision of roofing over large areas presents no difficulties, the shortage of suitable materials at the time the design was prepared prevented any action of this nature.

Apart from this, this company's experience has shown that uncovered steel has a relatively short life in engine sheds. I am aware that a number of experimental roof trusses made from aluminium has been erected in a shed in the Middle West of America, but this work was carried out within the last year, and at the time the L.M.S.R. was designing these sheds, aluminium was unobtainable. At present its use is ruled out by its relatively high cost, apart from any question as to its suitability for work of this nature.

When the re-roofing of the old type of "square roundhouses" was undertaken, the turntable was covered, but its diameter in these cases is smaller than in the new sheds; but even so it was necessary to provide tied arches over this area with a span of 50 ft.

As the new roundhouses are approximately circular, the effect of the wind would be to produce a suction over the turntable, and the absence of cover over this area is not so detrimental as might be supposed.

Continuous smoke troughs were adopted in the roundhouses because the engines generally are stabled with their chimneys to the outside wall, and the absence of troughs over the rest of the stalls would result in a large amount of smoke being left in the shed. The smoke troughs are a structural unit and support part of the roof.

Your correspondent appears to have overlooked the fact that glazing is provided on both sides of the troughs, and there is natural lighting along each stall at the point where it is required, distribution being much better than in any other type of roof.

Yours faithfully,
W. K. WALLACE,
Chief Civil Engineer

Sectioned and Exploded Drawings

1, Prebend Gardens,
Chiswick, W.4. November 26

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I am in entire agreement with the comments expressed on the sectioned perspective view of a rebuilt L.M.S.R. "Royal Scot," on page 555 of your issue dated November 14, in praise of what is indeed a very clever drawing. At the top of the front cover of that issue, however, reference is made to: "Third Exploded View:—L.M.S.R. Express Locomotive, p. 555".

May I point out that the use of the word "exploded," in connection with the perspective view in question, is incorrect. In an "exploded" view, the apparatus or machine to be illustrated is disassembled into various component parts, each comprising a separate figure. The folding plate accompanying the article in question is as you have described it on page 555, namely, a sectioned perspective view; it comprises one figure only and all the component parts are illustrated in the correct relative positions which they occupy in the assembled locomotive.

Yours faithfully,
G. S. SAUNDERS

Magnitude of the British Railway System

London. November 29

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—First, may I congratulate you on setting out the new railway organisation so clearly in yesterday's issue of *The Railway Gazette*? Next, may I raise a query on the last paragraph on page 609, where a statement issued by the British Transport Commission says that the British railways "will rank as the most important unified railway system in the world. . . . It carries 226,000,000 tons of merchandise a year."

According to the official returns, the tonnage in 1946 was 262,000,000, and the ton-mileage was 20,639 million. The last figure is the true measure of work done and is approximately one-third of the ton-miles handled by the Pennsylvania system in the U.S.A. That system is closely welded together, operating 13,180 route-miles as compared with the 19,860 miles of the British Railways. The density of freight movement is usually measured in America by "ton-miles per route-mile per day." On that basis the Pennsylvania has, I reckon, between 4 and 5 times the density of your lines.

American passenger business is entirely different from what one sees here. The Pennsylvania system is known to have carried 251 million passengers in 1946. Those using the Long Island Railroad made short journeys, but on the main routes coach passengers travelled 73 miles on an average, and 7,250,000 persons in parlour and sleeping cars made trips over 350 miles. There is nothing here to compare with the running of heavy trains for 900 odd miles between New York and Chicago.

There is no mistake about the Pennsylvania Railroad being a worthwhile property, magnificently maintained. It has often given a lead to other railways in matters like organisation, locomotive testing, train control, electrification and telecommunications. With big resources, the Pennsylvania is always ready for experiment and research. Americans may be excused for thinking that the system, of which it is the main partner, is second to none.

Yours faithfully,
ALLEGHENY

The Scrap Heap

"B.R."

The new title of British Railways strikes one as being as uninspired as the Labour Government themselves. For one thing the initials B.R. already belong to the British Restaurants.

If the present Government had any prospect of remaining for any length of time in office the system might have been called the Pony Express or the Deadwood Coaching Service.

As it is, some attempt might have been made to give the railways a name which would at least have given them equal standing with the Royal Mail.—*From "An Editorial Diary" in "The Glasgow Herald."*

* * *

LOSSIEMOUTH STATION BELL

An interesting ceremony was performed recently by Lt.-Colonel the Hon. Arthur C. Murray, C.M.G., D.S.O., Director of the L.N.E.R., and Chairman of the Scottish Board, when a bell which has been for many years in Lossiemouth Station was accepted officially by the railway company, properly hung in the station, and an appropriate inscription setting out its history placed alongside.

The bell is probably the oldest to be found at any railway station in the Kingdom. It is associated with the Gordons of Gordonstoun, whose castle and estate lie between Lossiemouth and Burghead, and was fixed originally in the turret of Lossiemouth House.

On the death of Lady Gordon, the house was bought and occupied by a sea captain, who was harbour master at the port. He removed the bell to the harbour to herald the arrival and departure of sailing ships. There it did duty for many years, until the whistle of the engine which drew the first train to Lossiemouth on August 10, 1852, sounded the death knell of the sailing ship service. The interests of harbour and railway being alike in these days, and the bell's utility at the harbour having come to an end, the captain had it removed to the station, where it was erected in the position where it now stands.

The bell is not of the ordinary hand type generally seen at railway stations. It weighs over a quarter of a hundredweight, and has a hook and eye for the attachment of a rope, as well as a handle. It is swung and secured in a strong wooden frame, and its notes, which are distinguishable at a great distance, can be heard with the utmost regularity five minutes before the departure times of trains, at departure times, and also when Greenwich mean time is signalled on the railway circuits, so that clocks and watches in the vicinity of the station and harbour can be set daily from the bell signal.

"Naturally, sir, the ban on foreign travel except for business enables us to give you much better service"

[Reproduced by permission of the proprietors of "Punch"

* * *

100 YEARS AGO

From THE RAILWAY TIMES, *Dec.* 4, 1847

GREAT NORTHERN RAILWAY.

To the Editor of the Railway Times.

SIR,—Will you allow me, through your columns, to ask the Directors of this Company what are the peculiar circumstances in the character of the line which render necessary the services of an *engineer in chief*, as well as an *engineer*? In these days of retrenchment, and with the engineering establishment of the Lancashire and Yorkshire before our eyes, we poor shareholders may, I think, be excused for feeling a little anxiety for an answer upon this point.—Yours, &c. CRUMENA.

* * *

G.M.T. FOR L.N.W.R.

The centenary of the adoption of Greenwich time on what is now the L.M.S.R. main line from Euston occurred on December 1. Until the opening for public through traffic of the Trent Valley line between Rugby and Stafford (49¼ miles) on December 1, 1847, station clocks all over the London & North Western Railway showed "local" time, which was behind Greenwich time by such margins as 7 min. at Birmingham, 10 min. at Manchester and Preston, and 12 min. at Liverpool and Chester. The original announcement which gave notice of the change to G.M.T. is still in the possession of the L.M.S.R.; it is dated November 15, 1847, and signed by Captain Mark Huish, General Manager.

* * *

RAILWAY HORTICULTURE IN SOUTH AFRICA

Horticulture is playing an increasingly important part on the South African Railways, and the section dealing with this part of the administration's activities has grown from two small nurseries to five nurseries, eight farms, and a staff of 60 qualified horticulturists. The Horticultural Department works in close co-operation with the railway Health & Welfare Section by ensuring that the lower paid staff and those living in areas where vegetables are scarce, get the fruit and vegetables necessary to maintain good health. Thousands of fruit trees are supplied free every year to men living in railway quarters. Fruit trees also are freely planted around station buildings and along the line for the benefit of railway workers.

Active measures are taken on all railway property to combat soil erosion. This calls for constant vigilance, and the cultivation of many different types of grass. At present 2,500,000 trees are being planted along the railway line on the North Coast of Natal. This is to afford protection to the large sugar cane plantations against sparks from locomotives. The eight farms were bought originally to secure water rights for locomotives. Some of the land had been abused either by over grazing or by soil erosion. They now have been transformed into model farms. During the war, when the Government called on farmers to grow more food, the railway farms were among the first to respond. Today, potatoes, maize, and pumpkins are grown to supply the natives living in railway compounds. Seven of the farms are to be used for afforestation.

* * *

AS SEEN ON THE SCREEN

The film critic of the *Washington D.C. Daily News*, reviewing the British film, "The Adventuress," writes as follows of the impressions of railway travel in Britain which he has gained from the cinema:—

"An American observer can't help coming away from 'The Adventuress' with the feeling that our own trains are drab, dead things. Not because they are so painfully unlike those plastic, soft-as-satin streamliners which continually rise to taunt us in newsreels and 'The March of Time' with the promise of future miracles of comfort, but because their sole function is transportation.

"On the evidence of British films a British subject of either sex need only set foot in a train to become involved at once in some sort of intrigue. The innocent-looking little old lady across the way is sure to be the head of an international munitions ring, and the colourless gentleman with the umbrella is inevitably a Scotland Yard inspector."

* * *

PULLING THEIR WEIGHT

Mrs. Annie Tillyer and Mrs. Kathleen Cockerill, both of Hackney, E., and both weighing 16 stone, were among the 1,000 L.M.S.R. employees on duty last week-end in the London area helping to clear goods wagons in the railways' "quicker turnround" drive. Known as "the Twins" because of their similarity in appearance, Mrs. Cockerill and Mrs. Tillyer work at Broad Street Goods Station as wagon sheeters, one of the heaviest jobs at this busy station.

* * *

FOG

Fog services are being run on L.M.S.R. and L.N.E.R. suburban lines, and the S.R. and G.W.R. are expected to announce altered services later if the fog makes it necessary.—*From the "Evening News," December* 1.

Is this how a similar announcement will read on January 1, 1948?

Fog services are being run on the B.R.L.M.R. and B.R.E.R. suburban lines, and the B.R.S.R. and B.R.W.R. are expected to announce altered services later if the fog makes it necessary.

* * *

AN ENCYCLOPÆDIA AT FAULT

Mr. Arthur G. Wells writes as follows regarding a railway error he has found in the "Encyclopædia Britannica":—

In the "Encyclopædia Britannica," 14th Edition, Volume 14, at page 286, I find, under a small diagram of the apparatus, the following caption: "Fig. 1. Locomotive coaling plant used by the London, Midland & Scottish Railway company at coal yards, Kings Cross, London."

On the next page, under another picture, is the following caption: "Fig. 5. Diagrammatic representation of coaling plant used at South Crewe, Cheshire, by the London & North Eastern Railway."

If such a respected work of reference as the "Encyclopædia Britannica" can produce two such errors on two consecutive pages, is it to be wondered at that the general public is usually so abysmally ignorant where railway matters are concerned?

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

RHODESIA

Rhodesia to Cape Link

The South African Minister of Transport has undertaken to ask the Railway Board to inquire "seriously" into various proposals for the closing of gaps between existing lines in order to decrease the distance between Rhodesia and Union ports. In particular, Natal would have a direct route *via* the Free State to Rhodesia by the suggested closing of gaps totalling 139 miles, which it is estimated would shorten the rail journey to Rhodesia by 150 miles. [See also *The Railway Gazette* of November 14.—ED., *R.G.*]

Rationing of Goods Traffic

Owing to the acute food position within the Colony, the Southern Rhodesia Government recently asked the South African Railways to give special priority to large consignments of maize, and also of fertilisers urgently required for the planting season. The railing of these commodities led to severe restrictions in the acceptance of general goods traffic. Shops in Rhodesia are complaining that business is being affected seriously by shortage of goods, and in consequence of the rail restrictions several firms are organising road transport convoys.

In the meanwhile, the rail position is likely to improve, as the truckage reserved for fertiliser now can be reduced safely. The pressure on the Mafeking—Bulawayo section, also, is being eased by the diversion of maize and motorcars to the Beit Bridge railhead, from which point transport by road is being organised by the Southern Rhodesia Government.

On the suggestion of the General Manager of the Rhodesia Railways, there has been set up a Railway Priorities Committee, which includes a number of Government departmental heads.

SOUTH AFRICA

Rising Materials Costs

While the South African Railways continue to carry almost their maximum capacity of traffic, profits are becoming consistently smaller each month. Expenditure on wages and on the acquisition and renovation of rolling stock is on the upgrade, and railway employees have been asked to give careful consideration to these matters before asking for further improvements in wages and conditions.

Owing to the high prices of steel and other items used in the construction of permanent way, it has been found necessary to revise drastically the estimates for the post-war reconstruction programme. It has been stated officially that the cost of laying one mile of track has risen from £3,027 in 1939 to £8,020. Nearly half of this increase has taken place during the past two years. The prices of timber, cement, and other materials have risen considerably, and higher wages are being paid to artisans.

Excursion Fares

Mr. F. C. Sturrock, Minister of Transport, recently stated that he was anxious to have excursion fares restored, even if they were made available only at certain times of the year. It probably would not be possible, however, to do anything before the middle of 1948. Mr. Sturrock said that he realised that the absence of excursion fares was unduly hard on the poorer sections of the population, who were as much entitled to holidays as any other.

Traffic Trends

The margin between railway earnings and expenditure is becoming smaller and smaller. In August there was a deficit of £174,333 on the operation of all services controlled by the administration, and the accumulated surplus at the end of that month amounted to only £224,260. The general trend of goods movement in all parts of the country shows no signs of decline, and the upward trend in goods traffic is as pronounced as at any time during the post-war period. Passenger traffic, however, has settled down to a consistent level with the more settled state of the country, and the revenue from this source now averages £220,000 a week, which is considerably lower than the average for the war years.

During September, 324 new wagons were placed in service, of which 192 were built in railway workshops. The first "S1" class engine to be built entirely in South Africa is now in traffic (see *The Railway Gazette* of October 17). August was a good month for engine deliveries, which included 14 Class "15F" engines, two of Class "19D," and one "G.E.A."

INDIA & PAKISTAN

Railway Inquiry Committee

The Indian Railway Inquiry Committee, 1947 (see *The Railway Gazette* of September 26), has dispersed temporarily, and will reassemble in March. The committee has submitted an interim report suggesting certain economies, the outcome of which appears to be the recent reduction in the strength of the Railway Board. It is expected that when the committee finalises its decisions and submits the final report, a saving of several million rupees will be made with a simultaneous increase in the efficiency of the Indian railways.

One of the terms of reference of the committee was to make suggestions for absorbing any staff that might be surplus, but the committee is reported to have put forward the view that there will be hardly any surplus staff by the time the Government gives effect to its recommendations.

Rail Transport Needed for Coal

India faces a coal crisis due to shortage of railway wagons and personnel. The Indian Mining Federation and the Indian Colliery Owners' Association have prepared a memorandum which says: "The present crisis, brought about by the failure of railways to arrange adequate transport for coal raised in general, and Bihar coalfields in particular, has been accentuated further by the exodus of engine crews and other skilled labour, the bulk of whom are Muslims, from the Indian Dominion. Against a normal stock held by the collieries of only one million tons, it has mounted to 2½ million tons and is rising daily. The average daily number of wagons adequate to carry the entire output is 32,000, against which the available supply is of about 2,000 wagons daily."

Australian Railway Commissioners in Conference

Left to right: Mr. G. A. Gahan (Commonwealth Railways), Mr. T. J. Hartigan (New South Wales), Mr. W. S. Wilson (Tasmania), Mr. N. C. Harris (Victorian Railways), Mr. J. A. Ellis, Chairman (Western Australia), Mr. D. W. Brisbane (General Manager, Midland Railway of Western Australia), and Mr. P. R. T. Wills (Queensland)

Photo] [West Australian Newspapers Limited

WESTERN AUSTRALIA

Commissioners' Conference

During the week from September 15 to 20 the Australian Railways Commissioners met in Perth, when they considered recommendations made at the earlier Interstate Officers' Conference, and dealt with an agenda of items regarded as Commissioners' matters. During their stay in Western Australia the party was entertained by the Commissioner of Railways (Mr. J. A. Ellis) at a series of outings to local beauty spots and places of interest.

The conference was attended by:—

Mr. J. A. Ellis, Commissioner of Railways, Western Australia (Chairman); Mr. P. R. T. Wills, Commissioner for Railways, Queensland; Mr. M. W. S. Wilson, Commissioner for Transport, Tasmania; Mr. G. A. Gahan, Commissioner, Commonwealth Railways; Mr. T. J. Hartigan, Commissioner for Railways, New South Wales; Mr. N. C. Harris, Chairman of Commissioners, Victorian Railways; and Mr. D. W. Brisbane, General Manager, Midland Railway Company of Western Australia.

Mr. Ellis, in a speech before the conference began, said it gave him very great pleasure to welcome the members to

Western Australia for its first conference. The Hon. H. S. Seward, Minister for Railways & Transport, Western Australia, in formally opening the conference, extended to members, officers attending with them, and visiting ladies, a hearty welcome to Western Australia.

ARGENTINA

Railway Sale Negotiations

It has been announced by the British Embassy in Buenos Aires that the mission headed by Sir Clive Baillieu, which was due to arrive at the end of November, definitely will take part in the discussions regarding the sale of the British-owned railways. One of the matters the mission will take up will be the provision of rolling stock and railway material by Great Britain; it is understood that the mission will be in a position to guarantee delivery dates, so that prospects are quite favourable.

On the other hand, Sr. Miranda, in an interview with the Buenos Aires correspondent of *The Financial Times* stated that "the negotiations over the British-owned railways were an entirely independent matter." He said the delay now was due solely to tardiness in deciding whether the Argentine Congress must approve the purchase. Questioned as to whether any material modification of the railway agreement was likely, he replied emphatically in the negative, although he clearly implied that further delay must be expected.

It should be noted that Congress is not normally due to meet until May 1, 1948, unless special sessions are called.

Central Argentine War Memorials

At a ceremony on November 10, wreaths of natural flowers from the London staff, and of Flanders poppies from the Argentine staff, were laid on the 1914-1918 war memorial of the Central Argentine Railway in the Grand Hall of the Retiro Station, Buenos Aires. Among those who attended the ceremony were:—

Mr. Robert Flack, Deputy General Manager & Chief Accountant; Mrs. D. M. MacRae, O.B.E., widow of the late General Manager; Mrs. Robert Flack; Mrs. W. A. Pickwoad; Mr. W. A. Pickwoad, O.B.E., Managing Director; Colonel K. Stirling-Wyllie, Chairman of the Buenos Aires No. 1 Branch of the British Legion; Mr. F. P. Miller, General Assistant to the Traffic Manager; Mr. F. B. Lowry, General Manager, Buenos Aires & Pacific Railway; and Mr. E. Myatt, Traction Superintendent, Central Argentine Railway.

Wreaths were laid also on the adjoining memorial to the men of the Central Argentine Railway who died in the 1939-45 war.

CANADA

Alaska Railway Project

Plans for construction of a railway from Vancouver to Fairbanks, Alaska, are under consideration by a group of private investors in the United States. The Washington counsel for the group said his clients had been studying the project for several years, and he hoped to be able to announce definite plans, along with the names of the backers, within 30 days. The project calls for taking over 345 miles of railways now owned by the British Columbia Government, and building another 1,000 miles into Fairbanks, where the proposed railway would connect with the Alaska Railway. It was predicted that either his group or some other would "start this railway within three or four years." The present plans contemplate that the railway will be constructed by private capital. It was hoped that after reaching Alaska the United States Government would aid in the construction, but no commitments had been received though Government officials had shown great interest.

The Premier of British Columbia, Mr. John Hart, said recently that he had advised the group of private investors, planning to construct a railway from Vancouver to Fairbanks, Alaska, that he was "not in a position to discuss the matter with them." Mr. Hart has been negotiating for some time with the Dominion Government and the Canadian Pacific and Canadian National Railways for a four-way partnership to extend the Pacific Great Eastern Railway into the Peace River district (see *The Railway Gazette* of October 24).

Holidays with Pay

A threat of a Dominion-wide strike of 125,000 employees of eight Canadian railways, which had been called for November 3, was averted on October 25, when the companies agreed to the recommendation of the Conciliation Board and conceded the men's demand for paid annual holidays. These will range from 6 days for employees with one year's service, to nine days for those with three years' service, and twelve days for workers having five years' service or more.

Diesel-Electric Locomotives for C.N.R.

The placing of orders for two powerful diesel-electric locomotives was announced in Montreal on November 26 by Mr. R. C. Vaughan, Chairman & President, Canadian National Railways. The locomotives consist of three units of 1,500 h.p. each, making two triple-unit, 4,500-h.p. locomotives. They will be built by the Electro-Motive Division of General Motors, and are the first main-line diesels to be ordered for Canada.

In announcing the purchase, Mr. Vaughan referred to the exhaustive tests made over C.N.R. lines earlier this year with a demonstration unit (see *The Railway Gazette* of May 9). An exacting schedule in heavy freight and fast passenger train services was operated over 7,446 miles in 11 days.

Publications Received

Instruction Book, Locomotive Superheaters. Published by the Superheater Co. Ltd., 53, Haymarket, London, S.W.1. 4th Ed. 6¾ in. × 5 in. 62 pages. 33 illustrations.—This is an excellent pocket manual, well printed and produced, and lavishly illustrated, covering practically all workshop aspects of superheater construction and maintenance. A brief introduction setting out the fundamental principles leads to a general description, followed by chapters dealing successively with headers, elements, maintenance, flue tubes, and notes on operation. In addition, a set of questions and answers relating to superheated locomotives is appended. This is definitely a book for the practical man, and is written in a simple straightforward style which makes the contents easy to assimilate; and the highly effective illustrations are also a great help to this end.

With requirements of workshop staffs kept so evidently in view, the introduction might well include a definition of latent heat in future editions, as this term is used without explanation, whereas superheat and saturation temperature are both carefully defined. Since the effectiveness of a superheater under running conditions is vitally affected by the cleanliness of flue tubes, a little more advice on cleaning them could perhaps have been given on page 54; the evils of choked flues are again enlarged upon on pp. 56-57, and 61, again without a hint on how to clean them. These are minor points, however, in a most commendable publication having considerable practical educational value and a wide field of usefulness.

Locomotive Superheaters. Published by the Superheater Co. Ltd., 53, Haymarket, London, S.W.1. 11 in. × 8½ in. 48 pp. 56 illustrations.—This attractively produced brochure, in contrast to the severely practical "Instruction Book" published by the same firm, is addressed particularly to the executive grades of railway officers. A good deal of technical information is economically and effectively conveyed by a few simple graphs showing how condensation increases as cut-off occurs earlier in saturated steam engines, and how an increasingly high degree of superheat is required to prevent this condensation from arising. Again the variation of total initial steam temperature and the heat content of exhaust steam (reckoned on the temperature of the latter) is conveyed by a family of curves covering modern conditions.

Succeeding sections deal respectively with superheater elements, element bands and supports, and superheater headers. The multiple-valve regulator, which for some reason or other has not yet "caught on" in this country, although so widely used abroad, is described and illustrated; and a section follows on the firm's automatic drifting valve. Finally a short account is given of the "sand gun" for cleaning tubes and flues whilst the locomotive is running. The brochure is well illustrated throughout, and in addition to many blocks which also figure in the firm's "Instruction Book," there are half-tone illustrations of well-known locomotives incorporating the firm's products.

Revised Standard Charges Scale. Birmingham, 2: The Railway & Shipping Co. Ltd., 12, Cherry Street. 10¼ × 8½ in. 30 pp. Paper covers. Price 10s. 6d.—The present-day railway rates based on the increases which became effective on October 1, 1947, are contained in this publication. Standard charges for Classes 1 to 21 are shown for every mileage up to 750 miles, and besides the station to station rates, the carted or delivered, and carted and delivered rates for Classes 11 to 20 are shown.

British Railway Stations Illustrated. Book Two: North Wales. Mersham, Surrey: The Railway & Technical Press, 185, Nutfield Road. 4¼ × 7¼ in. 60 pp. Paper covers. Price 3s. net.—The layout of this booklet is similar to the first in the series "British Railway Stations Illustrated," with full-page illustrations of stations arranged in alphabetical sequence, and preceded by a map which shows the location of the various stations concerned in North Wales. A considerable diversity of stations is presented, ranging from Bangor and Rhyl to such smaller examples as Cwm-y-Glo and Llanberis on the branch from Caernarvon. Several of the illustrations are of historical interest.

Press Comment on State Organisation of Railways

A selection of extracts from leading articles dealing with Sir Cyril Hurcomb's statement outlining the organisation of British railways from January 1 next under the British Transport Commission

THE guiding aims of the Commission have been to secure in full the advantages of unity while avoiding over-centralisation. Over-centralisation appears to have been interpreted as the collection of too many functions into the hands of one person, a risk to be guarded against not merely at the centre but also at divisional headquarters. The proposed organisation has been devised to avoid this risk at all points. . . .

The Executive will work through six "regional organisations," which correspond largely to the present railway systems, and might perhaps better be called divisions. Each of these will have "a highly responsible" chief regional officer. Working in association with him, and in some respects under him, there will be regional officers with functional responsibilities parallel to those of the members of the Executive. . . .

Is this a workable arrangement? Does it promise the avoidance of over-centralisation? Does it give the regional chief officers a reasonably defined and sufficient authority? Arrangements like these can be made better or worse by those who work them, but as they stand they must occasion some doubts. The proposed chain of "functional" responsibility from the regions to the centre may contribute to the risk of over-centralisation, instead of guarding against it. . . .

The vital step in co-ordinating all inland transport, of which the reorganisation of the railways is only a part, have yet to be decided. Of these the policy to be pursued in fixing rates and charges for the various transport services is crucial. No far-reaching reorganisation can come until this is settled—and with it the future of road competition. It would have been much better to have settled these matters first. Organisation cannot be effectively designed until its purpose is precisely conceived. So long as the method of co-ordinating rail and road is not clear, the most appropriate way of organising transport must necessarily remain obscure.—*The Times.*

The regional organisations will not have any collective responsibility, and if that is so it follows that they may have little autonomy. The first Regional Officers appointed are mostly the managers or acting managers of the present railway companies or sub-divisions thereof. Initially therefore personal prestige will no doubt largely compensate for any deficiency in the formal authority given to them. But the result in the longer run may not be so happy.—*The Times City Notes.*

The railways are to be, fundamentally, another National Coal Board, though they will administer resources seven to eight times as great in an "industry" many times more complex. . . .

It (the Commission) is determined that the new Railway Executive, like George III, shall "be a king." It will reign, not merely co-ordinate six powerful groups. How can it do this without over-centralisation—seeing that some even of the old groups at times seemed too big for effective central administration, and never really solved that particular problem? The Commission's answer is—by organising itself on functional principles.

These certainly look neat, slim and "streamlined"—on paper. The Executive—the higher control—is a body of specialists in public relations, labour negotiations, passenger, freight, and commercial matters, operating, civil, mechanical and electrical engineering, etc.—in fact on everything animal, vegetable and mineral. . . .

In theory, the system holds out at least a certain insurance against over-centralisation under one person, and at the same time promises to yield some of the material advantages of unified control of all the national railways. . . .

But its great danger is the risk of bringing in the evils of diarchy. The co-ordinating function is weak at the top, and even weaker in the Regions. . . .

Indeed, people will wonder whether the Commission, of itself, decided on the "functional" system at all. The Transport Minister's powers under the Act are well known. Is it conceivable that the Commission's members were "directed persons"?—*The Financial Times.*

The technique of management will be completely altered. The six railway regions will not be autonomous, as the four groups are now. The principle that the administration of large-scale organisations must be largely a non-specialist function has been discarded. It has been deliberately decided that there is no need for the type of officer whom the railways, like other commercial undertakings, describe as a manager. This decision cannot be viewed without uneasiness. It is a favourite idea of the Civil Service that administration is best left to specialists and that co-ordination can be entrusted to committees. This may have been a good idea when the Government machine was small. In more recent times it has been the cause of much weakness in public administration. During the war we learned by trial and error that no person or body can ever co-ordinate the work of others unless given high and indisputable authority. . . .

The new chief regional officers have to co-ordinate a number of functional experts who are not responsible to them but to their opposite numbers in the central executive. It will need very powerful personality to overcome such lack of powers. If the dual loyalty in the regions should lead to confusion in control the results may affect the public service.—*The Manchester Guardian.*

Clearly success will largely depend on the smooth working of the personal arrangements between each region, between one region and another, and between the regions and the central executive. The key men are the chief regional officers, who seem to have been well chosen. Undeniably a serious attempt has been made to solve the crucial problem of decentralisation which confronts every big organisation. The existing system might have been thought to have solved it sufficiently well to have been left where it was, but since the decree has gone forth that it is to be changed we must only hope, for the sake of the public weal, that the new one will work as effectively as the old—*The Daily Telegraph.*

There is a clear danger that the chief regional officers will in practice be short-circuited, in which case the entire railway system would be run from the centre. . . .

The new proposals illustrate the way in which over-centralisation is likely to stultify regional initiative. It is not a good omen for the effects of the nationalisation of transport.—*The Yorkshire Post.*

So long as members of railway executives are given specific and not general supervisory functions to perform, the danger must exist of their achieving only imperfect co-operation. A great responsibility will rest, therefore, on the six chief regional officers who will have to get the best out of their teams and at the same time act closely with one another, and with the national executive.

Perhaps, however, the real test of nationalisation will depend on the amount of initiative in a larger sense that is permitted to the regions. If they are encouraged to retain and even stimulate a sense of competition, all may yet be well. —*The Glasgow Herald.*

The new plans for running the four main-line companies as a single entity also hold out the hope that the nationalisers have profited by experience. Unlike the Coal Board, the Transport Commission has rejected all functional responsibilities. It is to remain as a central policy-making body deciding upon the broad issues of co-ordination. It has begun by creating a Railway Executive with very considerable powers. This body's success or failure will largely depend on the extent to which it decentralises these powers to the various Regions.—*News Chronicle.*

The grouping of Britain's railways into six big regional blocks is a practicable first step towards the big re-organisation and modernisation which must be as marked a feature of the 1950s as they were of the 1920s.—*The Evening News.*

A Scottish region, with headquarters in Glasgow, is to be created, but there is nothing in the statement to indicate that it will have real executive powers or that control, already too much centralised in London, will be decentralised. Decisions of regional application, it is claimed, can be taken locally, but it is unlikely that anything except minor details of administration can be settled without reference to London. —*The Scotsman.*

Each of the railways has had its Chief Mechanical Engineer, its Operating Manager, and its Commercial Manager. But these officers have not been the repository of the ultimate power of management. That function, which requires the broader view and the ability to arbitrate between different technical viewpoints, has reposed in the General Manager. . . .

The first comment on the form which has been chosen for the Railway Executive is that it appears to give undue prominence to the central functions of technical supervision and too little weight to the general functions of management. The only non-technical appointment is that of the Chairman himself. But no one person can be expected to manage the whole of British Railways, and, particularly in the early stages, the general functions of management will be all-important. . . .

An attempt might be made to fill this gap by setting up an advisory or secretarial body working in apposition to the Chairman. But can the supreme function of management be made subordinate?—*The Economist.*

The Chief Regional Officer seems destined to become a figurehead responsible for disposing of matters of local importance and for representing railway interests *qua* the public within his region. Such, of course, is quite contrary to the present concept of British railway management and it will at any rate prove an interesting innovation. In our view it will entail a serious and far-reaching division of responsibility and is likely to cause undue strain on the headquarters functional officers.—*Modern Transport.*

Experimental 4,000-h.p. Gas Turbine Locomotive Unit

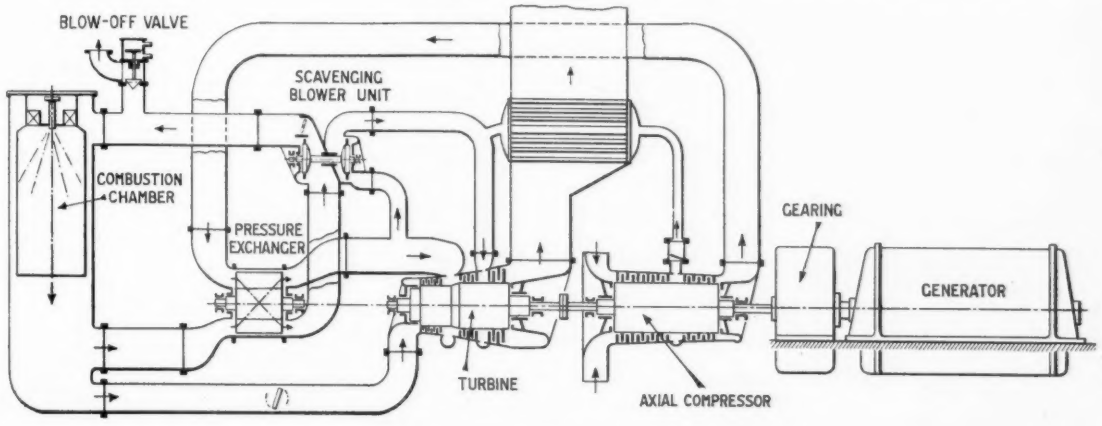
A new Brown Boveri unit featuring a high-pressure stage of novel design

A NEW locomotive gas turbine unit having an output of 4,000 h.p. has been designed and constructed by the Brown Boveri Company in the company's works at Baden, Switzerland, and is now in process of development. A diagram showing the general arrangement of the principal components of the new unit is reproduced. The most interesting feature is the novel design of the high-pressure stage, which incorporates a pressure exchanger.

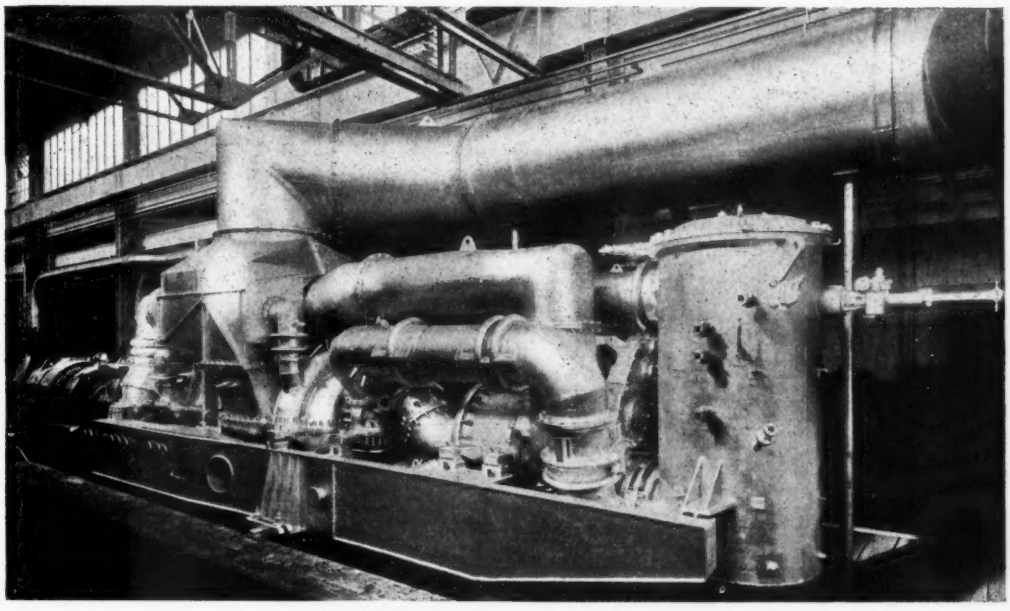
The pressure exchanger replaces the high-pressure compressor and high-pressure turbine of the more conventional type of two-stage gas turbine unit. Compression and expansion take place alternately in the same space. This is achieved by means of a rotating multi-cellular wheel, which is driven mechanically. The space inside the exchanger is filled alternately with cold air to be compressed, and with hot gas to be expanded. The walls attain only the mean temperature of the two media, which allows the use of a gas inlet temperature of over 800° C. No output power is developed by the pressure exchanger, but equality between the power developed in expansion and the power required for compression is achieved by virtue of the fact that, whereas the entire air supply passes through the exchanger on the compression side, only a proportion of the hot gas from the combustion chamber flows through the pressure exchanger on the expansion side of the cycle.

The combustion chamber is designed with two outlets. By guiding the gas in the combustion chamber in an appropriate manner, it is partly mixed with cooling air so that the gas temperature at one outlet is not higher than 600° C. The gas from this outlet is fed direct to the high-pressure end of the turbine. The gas which leaves from the second outlet is hotter, being at about 800° C., and contains a smaller proportion of cooling air. This gas flows to the pressure exchanger, in which it expands, and then travels to the low-pressure section of the turbine, where it mixes with the gas that has expanded in the high-pressure section of the turbine. Both volumes pass through the low-pressure turbine together and exhaust into the stack. The intermediate pressure is approximately 4 atm., and the high pressure approximately 10 atm.

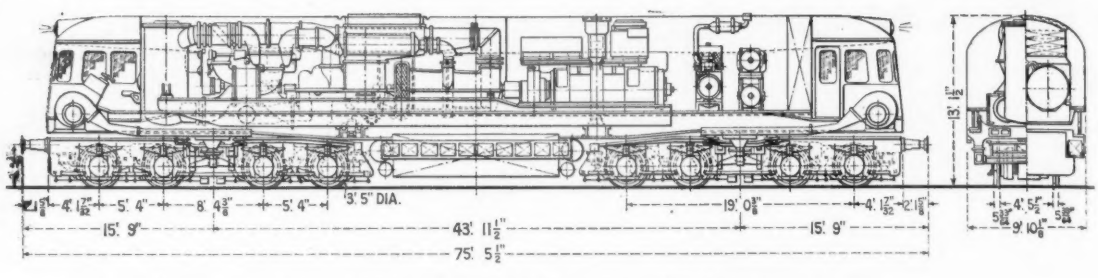
As will be seen from the photographic illustration, the complete gas turbine power unit is mounted on a separate auxiliary frame, thus forming an independent unit which is supported by the main frame of the locomotive. An outline drawing is also reproduced, showing the general arrangement of a projected 4,000-h.p. locomotive powered by the new unit. The length of the new locomotive will be 23 m. (75 ft. 6 in.), and the total weight 156



General arrangement of 4,000-h.p. gas turbine



Complete gas turbine unit on the test bed



General arrangement of projected 4,000-h.p. gas turbine-electric locomotive

metric tons (153 tons 11 cwt.). These figures may be compared with 16 m. (52 ft. 6 in.) and 92 metric tons for the original Brown Boveri gas turbine locomotive of 2,000 h.p., which now has been in regular service for some years. The power output has thus been doubled in the new design, but the length has increased only by 44 per cent., and the weight by 70 per cent.

Long-Distance Leave Trains for the Wehrmacht

A timetable of 1942 *recalls the complications of leave travel when German troops were stationed throughout Europe*

THE British Army on the Continent organised a very efficient service of leave and duty trains, but average distances were moderate (with the exception, perhaps, of the "Medloc" train from Calais). Leave trains must have been a more serious problem for the German transport authorities between 1940-44, when their occupying troops were stationed in nearly every country of Europe.

A Wehrmacht timetable published in 1942, which came recently into the writer's possession, gives details of the services then operated to and from Germany. Before dealing with the trains, a few of the notices and regulations in the timetable are of interest. An independent network was formed for Service travel in Germany, "friendly," and occupied countries. This was served by so-called "SF" trains (fast leave trains), and "DmW," "EmW," and "PmW" trains, which were public trains with reserved accommodation (the latter operated only within Germany).

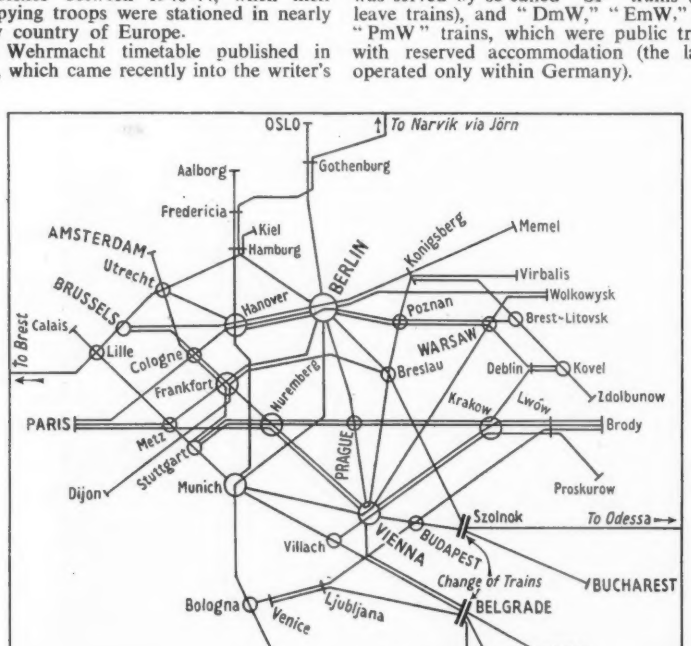


Diagram of principal through services

Besides troops, the following also were permitted to use the network: members of the Todt organisation (labour force) and "lecturers of the Ministry of Propaganda on tour." For journeys at "public expense" there were three different tickets. The first one was valid for "SF" trains; the second only for ordinary trains; and the third was available for all trains, but was to be issued "only in exceptional circumstances."

Travel on most of the trains was slow. Of two daily services between Athens and Belgrade, the faster took over 36 hr. Trains stopped frequently. On the down trip there was a halt of nearly 3 hr. at Salonika. One train daily in each direction ran between Naples and Berlin, taking about 34 hr. Three times a week a train left Narvik, and running through Sweden (*via* Boden, Jörn, Krylbo), and Denmark (*via* the Hälsinborg-Helsingör ferry, Copenhagen, and Fredericia), reached Berlin three days later.

The daily service between Oslo and Berlin changed its route occasionally. Sometimes the Warnemunde-Gedser ferry was used, and at other times the ferry from Sassnitz to Trelleborg (Sweden). One daily train between Brest and Kiel took 39 hr., but the timetable does not show which route was taken between Quimper and Amiens, which are two consecutive entries with a time interval of some 18 hr.

Most of the trains carried kitchen cars, and there were refreshment facilities at some stations, but travel in Continental stock on "hard" seats must have been very tiring on a two-day journey.

Some of the long runs, with their times and frequencies, are shown below:—

Calais-Munich, *via* Lille, Hirson, Metz, once daily, 23 hr.
The Hague-Heidelberg, *via* Eindhoven, once daily, 12 hr.
Aalborg-Munich (885 miles), *via* Fredericia and Hanover, 30 hr.
Brest-Litovsk to Cologne, *via* Warsaw, Leipzig, and Hamelin, 28 hr.

With reference to the accommodation likely to have been provided on these long journeys, it may be added that when in Germany last year, the writer noticed some third class carriages with compartments convertible to three-tier bunks.

Electrification of the Italian State Railways—2*

The transmission, rectifying, and contact systems on d.c. lines

By Lt.-Colonel A. C. Ping

INSTALLATIONS employed for the d.c. traction system will now be described in greater detail. High-tension transmission lines, previously at 60 kV., and since 1933 mostly at 120 kV., carry electric power at industrial frequency (from 42 to 50 cycles). These lines, which include both single and double circuits, run fairly near the railway lines, and feed substations situated at intervals of 35 to 50 km. according to the importance of the particular route.

Substations of the older type, fed at 60 kV., are either enclosed, or mixed (partly open and partly enclosed). Machinery and installations in the former category of substations are mounted inside a building; and in the partly open type all 60 kV. apparatus is mounted in the open, whilst that at lower tensions is inside the building. The 120-kV. substations are exclusively of the mixed type. Until a few years ago, every substation comprised one machinery building, with two floors, and other plant in underground rooms, together with an annexe containing a crane and workshop. Recently one combined building has been used, and the section which now contains the rectifiers (the transformers being in the open) is of one floor only, plus underground premises.

Incoming and outgoing feeders are connected to the high-tension busbars (one or two circuits) through section switches and circuit breakers. The transformers feeding the mercury-arc rectifiers also are connected to the same busbars through section switches and circuit breakers. Each rectifier is of a standard rating of 2,000 kW., and there are two or three in each substation, according to its importance.

The secondary winding of the transformers is a six-phase fork connection, having a current distributor or a double fork on each phase. Thus a 12-anode rectifier connection is made possible, two such rectifiers working in parallel with each other. A line at from 2,500 to 2,800 volts originates from the central star on the secondary winding of the transformer and feeds a transformer of 100 to 150 kVA. for auxiliary work in the substation. The centre of the star on the secondary winding of the main transformer constitutes the negative pole, and is connected to the running rails, whilst the positive pole is obtained from the rectifier cathode. From this point it is joined through section switches and high-speed circuit-breakers to the 3-kV. positive busbar, from which the contact line is fed through automatic switchgear which varies in extent according to the importance of the substation.

The d.c. produced by the rectifiers is not fully smoothed, and contains harmonics which may cause inductive interference on the telecommunication lines flanking the railway. Every substation, therefore, is equipped with filters for absorbing these harmonics. A battery of 120-V. lead accumulators supplies the d.c. required for remote controls, as well as for emergency lighting should the supply of a.c. fail. The battery is charged from a rotary machine consisting of a three-phase motor and two d.c. generators. One generator, with an output variable from 105 to 160V., is used for the floating charge of the battery, and feeds the busbars whence the high-tension switch controls and the controls for closing the high-speed switches originate. The other generator, the voltage of which is kept constant at 125 V. by an automatic regulator, feeds the busbars which supply the remote control indicators of all switchgear, and the holding-in coils of the high-speed circuit breakers.

Apart from the fixed substations, the State Railways possess various mobile conversion substations. These consist of a special wagon mounted on two 6-wheel bogies, which carries a 60-kV. or 120 kV. section switch; an oil circuit-breaker, also of 60-kV. or 120-kV. rating, a transformer for feeding a 12-anode 2,000-kW. mercury-vapour rectifier within a closed cabin, and all accessories.

The latter equipment comprises self-closing devices for feeding the contact line, low-tension apparatus and transformers for the auxiliary services and controls, and the switchboard. The total weight of such a substation ready for operation is over 100 tons, and the total length between buffers is about 65 ft. 7 in. Substations can be transported conveniently at 50 km.p.h.

Longitudinal suspension of overhead contact wires

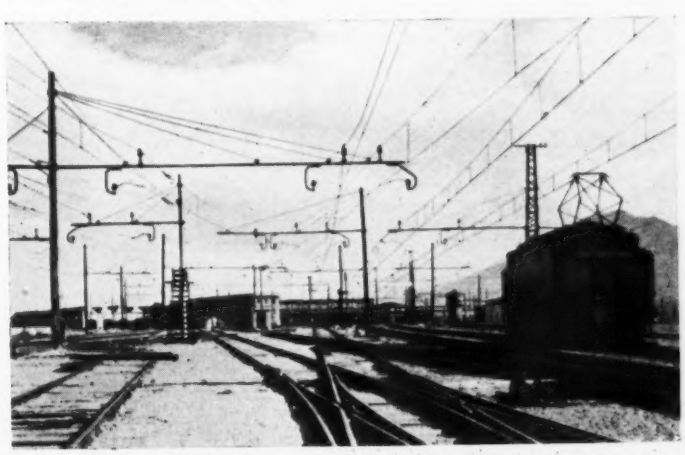
The contact line is supported by tapered tubular seamless steel poles, with ends of differing diameters, and placed 60 m. apart on the straight or on curves of a radius greater than 1,400 m.; and at a reduced spacing on sharper curves. Every pole has a seamless steel bracket supported by a tie-rod. The suspension is lengthwise, and comprises a copper wire rope supporting the contact wires (which also are made of copper) by means of copper supporters. There are generally two contact wires side by side. The supporters are 4 m. apart, and as they support the two wires alternately, each wire is supported every 8 m.

Saving Wear on Pantographs

In order to avoid localised wear at a central point of the sliding contact on the pantographs, the contact wires are placed so that they are hung from each suspension alternately to the right and left of the centre line of the rails. The displacement is 20 cm. either side of the centre line of the track, and thus in theory the area of sliding contact is 40 cm. Further, in order to obtain a satisfactory flow of current, even at maximum speed, the contact wires must remain parallel with the rails as far as possible, in spite of variations in local atmospheric conditions. For this purpose, a counterweight is placed at the end of each contact wire every 1,200 to 1,400 m., which by means of a system of pulleys maintains a definite tension. However, since the supporting rope is fixed rigidly at each pole, its sag varies according to changes of temperature, and therefore the height of the contact wire changes accordingly. These variations are slight, and permit of satisfactory operation.

On double-track lines, each line of rails has its own pole system, except at stations, where poles and brackets differ in type, and in many cases gantries are used. Station area brackets protrude either on one side only or on both sides of the poles, and are capable of supporting up to three contact lines on each side. Gantries are of various kinds, spanning from one to four tracks.

Lastly, feeders are placed along each line of track. These are copper conductors of large diameter, mostly overhead.



Overhead contact wire supports at Naples

* Part 1 of this article appeared in our October 10 issue

but occasionally covered cables. They are fed by the substations and connected to the contact wire by means of section switches at the extremities of each substation section. Their function, besides decreasing the voltage drop, is to permit of taking one station out of service without interrupting the continuity of the supply to the contact wires, thus enabling any given point near the substation to be fed by the two adjacent substations, instead of by only one of these.

It may be pointed out at this stage that additional feeders are not used normally in three-phase traction. Their use is restricted to exceptional cases, such as the feeding of a long section of line from only one end (as in the Bardonecchia-Modane section, through the Mont Cenis Tunnel); or on lines where the substations are widely spaced (such as Genoa-Sestri Levante, where the substations are about 25 miles apart).

In addition to substations for supplying the contact line, both 3-phase and d.c., the electrical installations of the State Railways comprise generating stations, substations for frequency conversion, synchronous group substations, and transformer substations. The generating stations, all of which are hydro-electric, supply only part of the power required for electric traction over the whole railway system, the remainder being supplied by power stations belonging to private companies. From a technical angle, these offer no special features compared with other power stations.

Substations for frequency conversion are used both for converting industrial frequencies into railway frequency, and for converting one industrial frequency into another, since, as stated earlier, there are three different industrial frequency systems in Italy, namely, 42, 45, and 50 cycles.

The oldest conversion groups are known as "stiff" or "rigid," whereas the more recent ones operate on the flexible frequency conversion principle. "Stiff" or "rigid" converters consist of two synchronous machines keyed on to the same shaft, one functioning as a motor and the other as a generator, but more frequently one of these synchronous machines is replaced by an asynchronous machine.

(To be continued)

Testing Multi-Core Jumper Cables

Amplifier to detect partial breaks in cables connected across its input

ON London Transport electric rolling stock, the control wires for traction and auxiliary apparatus are carried from car to car by means of 10-core jumper cables. In order to ensure correct operation of the apparatus, it is necessary to inspect and test the cables periodically, as breakages in any one of the 10 cores would cause breakdowns, resulting in delays to trains in service.

Apart from the usual examination of the condition of the external sheathing of the cables, the jumpers on receipt at Acton Works were given electrical tests consisting of: (1) a high-tension test to earth, and between each of the 10 cores; and (2) a continuity test which consisted of passing a current of 30 amp. at 4 volts through the cable.

Life of Cables

In practice it was found that these tests found cables which were defective already, but gave no indication as to whether a particular jumper was fit for a further period of service. It was the practice, therefore, to fix a definite life of a certain number of years, this life varying according to the position in the train formation and the use to which the jumper was subjected. For example, at points where coupling and uncoupling were taking place constantly, the life was short, being of the order of 2 to 3 years.

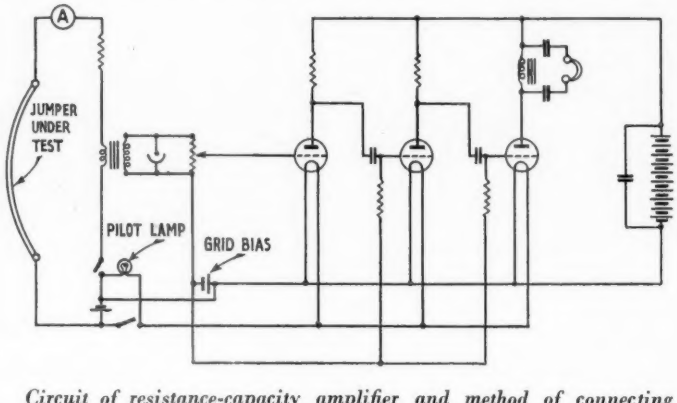
It now has been made possible to prevent the waste of valuable 10-core cable in this way by the use of a partial-break locator. This instrument has been developed and patented by British Insulated Callender's Cables Limited, for the detection of faults in mining equipment trailing cables, but can be adapted readily for use on any reasonable length of cable. It is possible to detect one strand broken in a core of 19 strands of ·018 wire.

The partial-break locator consists of a three-stage resistance-capacity amplifier, with a high-ratio gap-cored input transformer. The 10-core cable to be tested is inserted in the primary circuit of the transformer, the 10 cores being connected in series by means of coupling sockets provided, of which there are four in order to accommodate different types of jumper and jumper heads from different classes of stock.

The current required to flow is between 4 and 5 amp., which is provided by a 2-volt accumulator. An ammeter is included for checking the current and as an indication that the primary circuit is complete.

To use the instrument the jumper is shaken, and if a wire is broken a noise is detected at the output of the amplifier by means of the earphones provided. The noise is caused by amplification of changes in primary current produced by variations in contact between the broken ends of the wire.

The exact location of the break can be detected, as the greatest noise magnitude is obtained when the cable is tapped at the point of fracture.



Circuit of resistance-capacity amplifier and method of connecting jumper cable under test

The cable tester in use

L.N.E.R. Electric Locomotive in Holland

Test runs with Netherlands Railways passenger and goods trains

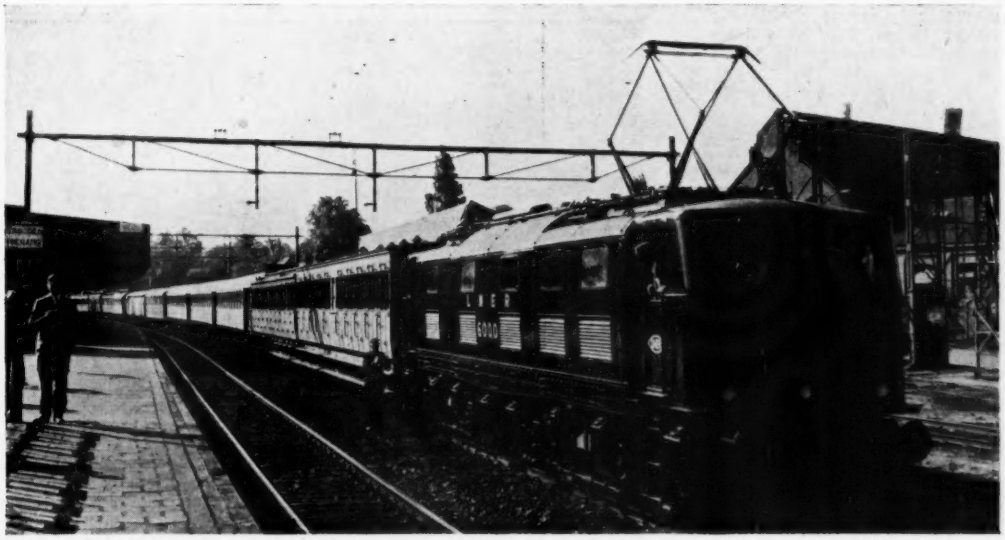
WHEN, at the request of Allied Headquarters and the Netherlands Government, 30,000 Dutch railwaymen struck and went "underground" in the summer of 1944, the Germans retaliated by removing or destroying the bulk of the steam and electric rolling stock, overhead line equipment, substations, and many important railway bridges in Holland. Strenuous efforts by the Netherlands Railways have restored electric train services over approximately 350 route-miles, and it is intended to complete the electrification of all main lines, another 500 route-miles, within a few years, for which a large number of electric locomotives and multiple-unit electric trains will be required.

Early this year Dutch railway engineers were in England, and discussed with the Chief Electrical Engineer of the L.N.E.R., Mr. H. W. H. Richards, the design of the first 1,850-h.p. mixed-traffic electric locomotive which was completed in 1941 for the Manchester-Sheffield electrification scheme (see our March 7, 1941, issue). It was agreed that much useful experience and mutual benefit would be obtained if this locomotive could be run for extended trials on the Netherlands Railways, and this proposal was approved by the directors of the L.N.E.R.

Electric locomotive No. 6000 therefore was transported to Holland in September by means of the L.N.E.R. train ferry from Harwich to Zeebrugge, and has just completed 10,000 miles on the Netherlands Railways without any defect occurring while in service. At the present time this locomotive is running 400 miles a day for five days a week, hauling passenger trains between Utrecht and Eindhoven, and with a load of 330 tons a speed of 62 m.p.h. is reached in 4 min., and the maximum permitted speed of 65 m.p.h. in 5 min. No. 6000 on many occasions has hauled freight trains up to a maximum load of 1,600 tons, when a speed of 40 m.p.h. is reached in 5 min.

When trial running took place in this country on the M.S.J. & A. joint line in 1941 (see our October 17, 1941, issue), it was found that, with a train of six coaches, weighing 250 tons, a speed of 25 m.p.h. could be reached in 25 sec., which is equivalent to the rate of acceleration of many suburban electric train services. The tests in Holland are providing valuable experience regarding operation and the wearing qualities of important parts, which thus will be available before construction of the remaining 84 locomotives for the Manchester-Sheffield electrification is far advanced. It is intended to continue the tests for a considerable further milcage.

L.N.E.R. locomotive No. 6000 approaching Utrecht on a 1,600-ton goods train



Passenger train at Naarden-Bussum, hauled by L.N.E.R. locomotive No. 6000

All-Motor Trains for London Transport

Conversion of trailer cars to take drivers' compartments and guards' door control equipment

IN connection with the 143 new non-driving motor cars ("R" stock) which are being constructed by the Gloucester Railway Carriage & Wagon Co. Ltd., and the Birmingham Railway Carriage & Wagon Co. Ltd., for the London Transport District Line rolling stock replacement programme, 82 existing trailer cars ("Q" stock) will be converted to run as driving motor cars with the new cars. When these trailers were built, the opportunity was taken to design the cars in such a way that at a later date they could be converted readily to motor cars.

Interior view of end of "Q" stock trailer car as originally built

To this end, cab side doors were fitted and sealed up, and arrangements made so that the removal of the cross seats and fitting of a partition at the end of the car for the driver's compartment could be carried out. Likewise, the bogies were constructed as motor bogies to enable the traction motors to be fitted at a later date, and the brake cylinders on the bogies arranged to be substituted easily by a larger size to deal with the increased weight.

The car body conversion work thus envisaged will be carried out by the Gloucester Railway Carriage & Wagon Co. Ltd. concurrently with its share of the construction of the 143 new cars, so that delivery will be in step and enable complete trains to be put into service. In addition to the provision of the driver's compartment already mentioned, the car builders' work will include some rearrangement of underframe equipment, drawgear modifications, and the mounting of certain braking and door control equipment purchased by London Transport under separate contracts, and supplied by the Board to the car builders.

At the same time, the British Thomson-Houston Co. Ltd., which has the contract for the traction control equipment on both new and converted cars, will be responsible for the mounting of traction control and driving equipment, and for the power, control, and auxiliary wiring.

On 51 of the 82 cars to be converted, the existing drawgear, consisting of Ward automatic mechanical couplers, will give place to Wedglock automatic mechanical air and electric couplers at the driving end, and semi-permanent bar type couplings at the non-driving end. These 51 cars, which will become eastbound driving motor cars, will be used at the eastbound end of either six- or eight-car trains, and will, in association with similar drawgear to be provided on appropriate new non-driving cars, afford a ready means of adjusting the length of trains to suit traffic requirements.

The remaining 31 converted cars, which will be used as westbound driving motor cars, will not be required normally to couple at their driving ends, and will retain the existing Ward type coupler for use in emergency only. The non-driving ends of these cars will be fitted with semi-permanent bar couplings linking them with appropriate new non-driving cars.

The drivers' compartments to be provided will be equipped with self-lapping electro-pneumatic brake controllers similar to the type in use on the London Transport 1938 stock, but embodying certain improvements arising from the now extensive operating experience with this system of braking control. At the same time, the opportunity will be taken to modify the existing electro-pneumatic brake units on the underframes to the somewhat simplified system being adopted on the new "R" stock non-driving cars. Retardation control of the London Transport standard mercury ring type will be incorporated in the converted car brake equipments.

Provision of Guard's Compartment

To enable the guard on an "R" stock train to be located in his normal position at the non-driving end of the rear car, the converted cars will be fitted with door-control equipment in the end panels, a hinged barrier being provided to separate him from the passengers when he takes up his position. In place of the present standard type of push-button door control box, these cars will be the first to be fitted with an entirely new type of door controller, operated by a rotary movement of the guard's key, which is removable only in a central "off" position.

The key, which is inserted through a "gate," rotates in a vertical plane to an "open" position on one side and a "close" position on the other; a special lock button must be operated before the key can be moved to set for "passenger control" from the individual push-buttons at the doorways. Additional safeguards against incorrect operation include a red warning light when in the "passenger" position, and a signal button which is operative only when the key is turned to the central "off" position. Operating improvements include also the provision of a new trigger type "set" and "trip" switch for auxiliary controls, and door interlock pilot lamps individual to each door controller.

As on the new "R" stock non-driving

(*Continued on page* 655)

End view of trailer car showing how it will appear after conversion to an "R" stock driving motor car

To Turkey by the "Simplon-Orient"

(From a correspondent)

Passengers for Istanbul are conveyed by road across the Turkish frontier to avoid travel on lines in a military zone

THE title "Simplon-Orient Express" today is something of a misnomer. First of all, it is not an express beyond Trieste, and secondly it is hardly a train. The writer and his wife, who recently travelled from Paris to Istanbul, were the only passengers completing the journey. The train is, in fact, an express from Paris to Trieste. Once across the Jugoslav frontier it is reduced to a single coach attached to a local train as far as Zagreb.

At Zagreb it joins a Belgrade express and makes fairly good time to the Jugoslav capital, where there is a wait of over three hours. Passengers are permitted to leave the train and may walk about the city at will.

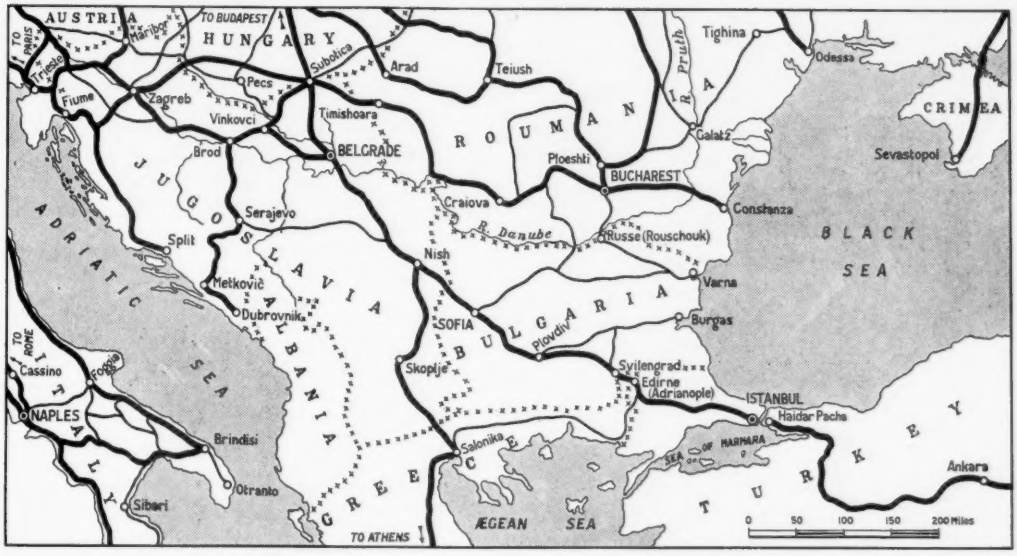
Leaving at midnight, the Simplon coach is attached to a Belgrade-Sofia express, and again makes fairly good time. There is a stop of 7½ hr. in Sofia. Passengers are perfectly free to go where they like. The final lap turns the "express" into a local. It stops at almost every station from Sofia to Svilengrad, on the Greek frontier. Because the Bulgarian Government has asked Greece to guarantee the safety of Bulgarian rolling stock, and the Greeks have been unable to comply with the request (owing to the Partisan war), passengers detrain at Svilengrad. They are taken in an open lorry to the Turkish frontier, where they join a Turkish bus service.

A trip of 43½ miles is made in this vehicle to a point east of Adrianople, since the Turkish Government does not want foreigners to see what military preparations are being made on the lines near the Bulgarian frontier.

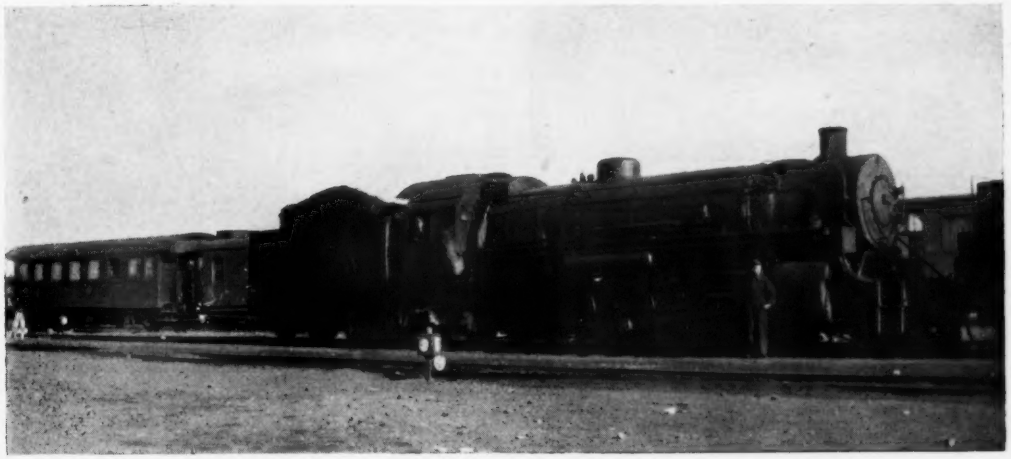
The Turkish train onwards to Istanbul includes a restaurant car which is a converted wagon, and therefore difficult and uncomfortable to eat in. Obviously traffic is so small that it is not worth while attaching a normal dining car. Nevertheless, international passengers are grateful for this vehicle, as no food is available on the journey between Belgrade and Svilengrad. Regular Turkish expresses, such as the Istanbul-Ankara express, are slow. This particular train takes 12 hr. to run between the two cities, and makes innumerable stops.

Development of Turkish Railways

The Turkish railway network is opening up only slowly, and it is only recently that lines to the north-west have been opened to traffic. The Minister of Public Works, M. Kazim Gulek, told the writer that he intends expanding the network considerably. His problem is credits, as the military needs take up half the budget. Nevertheless, as railways now have strategic importance for Turkey, building will be pushed ahead. The administration recently purchased 24 locomotives from the U.S. Foreign Liquidation Commissioner.



Principal railway routes in the Balkan countries and the Near East



Standard American military type 2–8–2 locomotive in the yard at Ankara

Photo] *[Colonel Eric L. Bell*

Turkish State Railways Goods Rolling Stock

(An article on a recent journey to Turkey by the Simplon-Orient Express appears on page 649)

Goods train leaving Ankara headed by a 2-10-0 Henschel locomotive [J. Thompson

Photol

Type "N" standard open wagon [Colonel Eric L. Bell

Standard 40-ton mineral hopper wagon

Photol

RAILWAY NEWS SECTION

PERSONAL

SIR JAMES MILNE

The directors of the Great Western Railway Company announce that the resignation of their General Manager, Sir James Milne, of which he notified them some time ago, will take effect as from December 31.

The Chairman of the Great Western Railway Company, on behalf of the board of directors, on November 28 presented to Sir James Milne, the General Manager, a silver inkstand, formerly the property of the Lord Mayor of London in the reign of King George III, in recognition of the outstanding services which he has rendered to the company and with their grateful thanks.

On board the ss. *Falaise* at Southampton Docks on November 27, Sir Eustace Missenden, Chairman of the Railway Executive, was presented with a silver cigarette box, suitably inscribed, by Docks & Marine officials of the Southern Railway; the presentation was made by Mr. R. P. Biddle, Docks & Marine Manager. Lady Missenden, who accompanied her husband on the visit to Southampton Docks, was also the recipient of a gift from the same officials.

Sir Cyril Hurcomb, G.C.B., K.B.E., Chairman of the British Transport Commission, on November 28 received the order of Grand Officer of Orange Nassau from His Excellency the Netherlands Ambassador on behalf of Her Majesty the Queen of the Netherlands. During the war, as Director-General of the Ministry of Shipping, Sir Cyril Hurcomb acted in close co-operation with the shipping authorities of the Netherlands Government, and was Chairman of the Anglo-Netherlands Shipping Committee.

We regret to record the death on November 29, at the age of 73, of Sir Robert Blyth Greig, M.C., LL.D., D.Sc., a Director of the London Midland & Scottish Railway Company, Dundalk, Newry & Greenore Railway Company, Scottish Motor Traction Co. Ltd., David Macbrayne Limited, and other companies.

Mr. C. M. Jenkin Jones, Divisional General Manager, North Eastern Area, London & North Eastern Railway, is retiring on December 31.

Mr. Shirley H. James, Personal Assistant to the General Manager of Pickfords Limited, retired on November 30.

G.W.R. HOTELS & CATERING DEPARTMENT

Mr. W. P. Keith, Assistant to Hotels & Catering Manager, Paddington, Great Western Railway, has been appointed Manager, Hotels & Catering Department, Paddington, effective from January 1, 1948, in place of Mr. R. A. P. Setterfield, retiring on December 31 next.

Mr. F. R. E. Davis, C.B.E., F.C.I.S., F.S.I., who retired on November 30 from the position of Secretary to the Great Western Railway Company, was born on March 21, 1887, and educated at St. Mark's College, Chelsea. He began his career in the Accountant's Office, South Eastern & Chatham Railway, and in 1902 transferred to the Great Western Railway, in the Audit Office, entering the Secretary's Department in the next year. In May, 1914, he was appointed Secretary to the London & North Western and Great Western Railways Joint Committee. During the 1914-18 war he served with the Royal Naval Air Service and the Royal Air Force; he was made an O.B.E. (Military Division) and was mentioned in despatches. He was one of the British officers selected for service with the American Forces on the entry of the U.S.A. into the war, and in that capacity he visited America and was subsequently attached to the U.S. Forces in Western Europe. After demobilisation Mr. Davis became, in 1919, Secretary to the Fishguard & Rosslare Railways & Harbours Company, and he acted as Secretary to the Cork City Railways Company in connection with the winding-up of that company and the transfer of its undertaking to the Great Southern Railways Company of Ireland. In May, 1922, he was made Assistant Secretary to the Great Western Railway Company, of which he was appointed Secretary in January, 1926. Mr. Davis has acted on behalf of the company as a Director of the Penarth Pontoon Slipway & Ship Repairing Company, a delegate to the Railway Clearing House and member of its Superintending Committee. He has always taken a keen interest in staff matters, and for many years has been a trustee of the G.W.R. Enginemen's & Firemen's Mutual Assurance, Sick & Superannuation Society, the G.W.R. Pension Society and the G.W.R. Provident Society, and a member of the committee of management of the G.W.R. Superannuation Scheme of 1908 and Fund of 1941, and the G.W.R. Salaried Staff Widows' & Orphans' Pension Society. Mr. Davis passed the Bar Final Examination in 1919. He was President in 1932 of the Chartered Institute of Secretaries, and is also a Fellow of the Royal Institution of Chartered Surveyors. He has been for some time a member of Kensington Royal Borough Council, and was Mayor from 1945 to 1947. Mr. Davis was made a C.B.E. in the New Year Honours. 1936.

Mr. F. R. E. Davis

Secretary, Great Western Railway Company, 1926-47

Mr. E. W. Rostern, Superintendent, Southern Area, L.N.E.R., was invested with the insignia of an O.B.E. by the King on a journey from Kings Cross to Wolferton on November 26. The award of that decoration to Mr. Rostern was announced in the King's Birthday Honours List, 1946.

Mr. Leif Egeland, at present the Union's Minister to the Netherlands and Belgium, has been appointed High Commissioner for the Union of South Africa in London, in succession to Mr. Heaton Nicholls.

We regret to record the death on November 29, at the age of 92, of Mr. C. A. Roberts, C.B.E., who was Chief Goods Manager of the Great Western Railway from 1912 to 1921.

Mr. G. E. Beharrell, Managing Director of the Dunlop Rubber Co. Ltd., has been elected President of the Tyre Manufacturers' Conference in succession to the late Sir Harold Kenward.

Mr. R. G. James has been appointed General Manager of the East Kent Road Car Co. Ltd. in succession to Mr. A. Baynton, who is retiring shortly. Mr. James is at present General Manager of the Devon General Omnibus & Touring Co Ltd., and takes up his new duties on a date to be agreed.

Mr. J. Billington, Purchasing Agent, Metropolitan-Vickers Electrical Co. Ltd., is retiring on December 31, after 45 years' service. He will be succeeded by the present Contracts Manager, Mr. G. T. King, and Mr. King's assistant, Mr. H. Lawson-Jones, will become Manager of the Contracts Department. Since August, 1945, Mr. Billington has also been Chairman of the A.E.I. Group Purchasing Committee, which co-ordinates purchasing activities throughout the organisation of Associated Electrical Industries Limited.

Sir George Cuffe

General Manager, Bombay, Baroda & Central India Railway, who is retiring

Mr. M. R. Bonavia

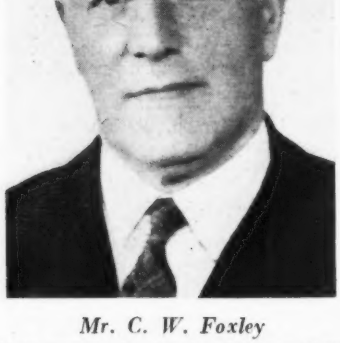
Appointed Assistant Secretary (Development & Works) to the British Transport Commission

Mr. K. A. Kindon

Appointed London Suburban District Goods Manager, L.N.E.R.

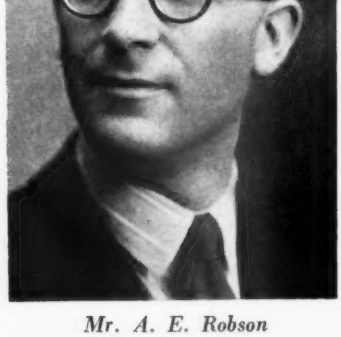
Sir George Eustace Cuffe, General Manager, Bombay, Baroda & Central India Railway, who proceeded last October on leave preparatory to retirement, is the son of the late Reverend George Cuffe, Rector of St. John the Baptist's Church, Coventry, and was born in that city on May 15, 1892. He was educated at Marlborough and at Jesus College, Cambridge, where he became in 1914 a B.A. with honours in Engineering. He joined the Royal Engineers in 1914, in which he served throughout the war of 1914-18. He was mentioned in despatches, and was demobilised in 1920, when he was a Captain. He served an apprenticeship on the London & South Western Railway in the Traffic, Signal Engineering and Electrical Engineering Departments, and went to India in 1923 as an Assistant Traffic Manager of the Assam Railways & Trading Co. Ltd. He became its Traffic Manager in 1924, and Agent & General Manager in 1928. Sir George Cuffe joined the Assam-Bengal Railway in February, 1935, as Agent, a designation which later was changed to Agent & General Manager. He was appointed General Manager of the Great Indian Peninsula Railway in July, 1940, but in 1943, when a considerable construction programme, to increase the military lines of communication into Bengal and Assam, was being carried out, he was transferred as General Manager of the Bengal & Assam Railway. During his time on the B.A.R. the daily "lift" into Assam was more than quadrupled. Sir George Cuffe was appointed Director-General of Railways, Calcutta Area, in April, 1945, where he served until the post (a wartime one) was abolished. He joined the B.B.C.I.R. as General Manager during December, 1945. Sir George Cuffe, who received the honour of knighthood in the New Year Honours, 1946, has recently served on the Indian Railway Inquiry Committee, a committee set up by the Government of India early in 1947 to make a general examination of the financial position of the railway system in India, and, in particular, the best use of manpower and material and the revision of the rates and fares structure.

Mr. M. R. Bonavia, M.A., A.Inst.T., who, as recorded in our November 21 issue, has been appointed Assistant Secretary (Development & Works) to the British Transport Commission, was educated at St. Paul's School and Corpus Christi College, Cambridge. In 1931 he joined the Information Department of N. M. Rothschild & Sons, merchant bankers, and in 1936 was appointed Assistant Clerk of the Court, University of London. In the next year he became Maintenance Officer and in 1941 Acting Clerk of the Court. He was appointed Manager of the Market Research Department, United Steel Cos. Ltd., Sheffield, in 1943. In July, 1945, he was appointed Assistant to the Chief General



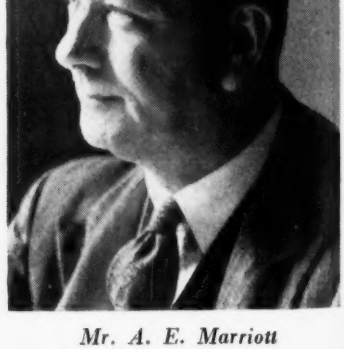
Mr. C. W. Foxley

Works Superintendent, Carriage & Wagon Works, Derby, L.M.S.R., 1941-47



Mr. A. E. Robson

Appointed Works Superintendent, Carriage & Wagon Works, Derby, L.M.S.R.



Mr. A. E. Marriott

Appointed Assistant (Claims), Chief Commercial Manager's Office, L.M.S.R.

Manager (Public Liaison), L.N.E.R., and later in the same year was appointed to the additional post of Post-War Development Liaison Officer. Mr. Bonavia has written numerous articles and broadcast on various occasions on railway and transport matters, and is the author of "The Economics of Transport."

Mr. K. A. Kindon, Assistant London City Manager, L.N.E.R., who, as recorded in our October 24 issue, has been appointed London Suburban District Goods Manager, was educated at Southgate County School and London University (London School of Economics and King's College). He joined the staff of the Chief Goods Manager, Great Central Railway, in 1918, and he was appointed to the Wages Staff Section, Chief General Manager's Office, L.N.E.R., after the amalgamation in 1923. In the next year he was one of the five successful candidates in the first competitive examination for the selection of traffic apprentices; after three years' training he was attached to the Goods Manager's staff in London. In 1930 Mr. Kindon was appointed a supervisor at Kings Cross Goods Depot, and in 1933 he returned to the Goods Manager's Office to take charge of the Tenancy Section. In the next year he went to Liverpool as Assistant to the District Goods Manager, and when the Goods Manager's Development Section was inaugurated in London in 1936 he was selected to take charge of that new work. Mr. Kindon was appointed Assistant to District Manager, Nottingham, in 1939, but immediately before the outbreak of war he was lent to the Ministry of Food as Chief Transport Officer, Potato Division. The company secured his release in 1940, and, after returning to Nottingham, he was appointed Assistant District Goods & Passenger Manager there in the next year. With Nottingham as the headquarters of the North Midland Region, that position involved service on a number of committees as liaison with the various Government departments which had their regional offices there. Mr. Kindon was appointed Assistant London City Manager in 1946.

Mr. Charles William Foxley, A.M.I.C.E., who, as recorded in our November 14 issue, has retired from the position of Works Superintendent, Carriage & Wagon Works, Derby, L.M.S.R., entered the service of the L.N.W.R. as an apprentice at Wolverton in 1900, commencing with five years in various workshops, after which he transferred to the drawing office. In 1917 he joined the Outdoor Carriage Section, and in 1924 was appointed Works Manager at Bromsgrove. In 1925 he became Carriage & Wagon Works Manager at Plaistow. After a period at Euston, Mr. Foxley was appointed, in 1931, Head of the Research & Plant Section, Carriage & Wagon Works, Derby, where, in 1938, he was promoted Assistant to the Superintendent, Carriage & Wagon Works. He became Works Superintendent in August, 1941.

Mr. A. E. Robson, M.B.E., A.M.I.Mech.E., M.I.Loco.E., Works Superintendent, Locomotive Works, Derby, L.M.S.R., who, as recorded in our November 14 issue, has been appointed Works Superintendent, Carriage & Wagon Works, Derby, was educated at Bemrose School, Derby, and Derby Technical College. He served an apprenticeship at Derby Carriage & Wagon Works, L.M.S.R., from 1925 to 1930, and was then a draughtsman in the Machinery & Plant Drawing Office until 1933. He was subsequently Inspector in charge of Internal Works Transport, also assisting the Works Superintendent in special investigations, and was afterwards Progress Assistant to Works Superintendent. From 1938 he was responsible for the development of, and production in connection with, all aircraft work in the company's Derby Carriage & Wagon Works, and in 1942 he was appointed Assistant Works Superintendent. He was made Assistant Locomotive Works Superintendent, Derby, in 1945, and Locomotive Works Superintendent in March, 1946. Mr. Robson was made an M.B.E. in the King's Birthday Honours, 1945.

Mr. A. E. Marriott, A.M.Inst.T., District Goods & Passenger Manager, Northampton, L.M.S.R., who, as recorded in our November 14 issue, has been appointed Assistant (Claims), Chief Commercial Manager's Office, joined the L.N.W.R. as a probationer in 1915, and received his early training in the Goods, Passenger and Operating Departments of the Manchester and Warrington Districts. He was appointed Goods Agent at Harrow in 1922, and, on the amalgamation, was transferred to the staff of the Chief General Superintendent, Derby, in 1923. Afterwards he transferred to Euston, where he served in the Road Transport Development and Research Departments. He became Assistant Head of Section of the Commercial & Canvassing Department in 1931. Three years later he was appointed Assistant District Goods & Passenger Manager, Leicester, which post he vacated in 1943 to become Assistant District Goods Manager (Commercial), Broad Street. Mr. Marriott was appointed District Goods & Passenger Manager, Northampton, in November, 1944.

The National Coal Board has appointed Mr. H. J. Hutchinson, Second Secretary, Board of Trade, to be its Secretary. Mr. J. R. C. Helmore, Second Secretary (Overseas), Board of Trade, succeeds Mr. Hutchinson as Second Secretary, and Mr. F. L. Holmes, Under-Secretary in the Commercial Relations & Treaties Department, succeeds Mr. Helmore.

Sir Frank Smith has been appointed a Director of the Birmingham Small Arms Co. Ltd.

Mr. A. F. Gadsby has been elected to a seat on the board of Guest, Keen & Nettlefolds Limited.

The late Sir Hardman Lever, who was a Director of the Dunlop Rubber Co. Ltd., left £202,997.

Mr. D. W. Plaistowe has been appointed to the board of the Glacier Metal Co. Ltd. as Commercial Director. He was formerly Commercial Manager.

Mr. J. H. Albertini and Mr. E. T. N. Allnutt have been appointed Joint Managers, Export Sales Department, of Ruston & Hornsby Limited and Davey, Paxman & Co. Ltd. (other than marine sales).

The council of the Institution of Railway Signal Engineers has accepted the offer of Mr. V. S. King to act as Honorary Editor of the *Proceedings*, in succession to Mr. T. S. Lascelles, who has dealt with that work since the death of Mr. H. Raynar Wilson in 1936.

SOUTHERN RAILWAY STAFF CHANGES

Mr. A. W. Sheldon to be Assistant to Divisional Engineer, Central Division.

Mr. F. A. Holmes, Assistant Chief of Police, retires on December 15, and Mr. W. W. Wood is appointed Assistant Chief of Police.

Mr. J. Watson to be Senior Assistant Western Divisional Superintendent of Motive Power.

Mr. W. H. Nicholson to be Second Assistant Western Divisional Superintendent of Motive Power.

Fenchurch Street Refreshment Room Opening

Sir Charles H. Newton, Director, L.N.E.R., and formerly Chief General Manager, at the opening of the new combined refreshment and waiting room at Fenchurch Street (see last week's issue)

Ministry of Transport Accident Report

Stratford, L.P.T.B.: December 5, 1946

Lt.-Colonel E. Woodhouse inquired into the accident which occurred at about 10.38 a.m. on December 5, 1946, near Stratford, on the Central Line, L.P.T.B. An empty train, No. 18, consisting of three motor cars and three trailers of standard tube stock, weighing 150 tons empty, having passed a signal at danger under the "stop and proceed" rule, collided at some 10 m.p.h. with train No. 31, also empty and of similar composition. The motorman was being accompanied by three of the Signal Engineer's staff and they were trapped in the driving compartment. One of the men died before he could be extricated, and the motorman and the two others were so seriously injured that the inquiry could not be concluded until May 28. It was necessary to use flame cutting to release the men from the crushed steelwork, and the last was not freed until 2.5 p.m.

The accompanying diagram shows the line and signals and other details essential to an understanding of the case.

The line had been opened on the day before the accident, from Liverpool Street, as far as Stratford, where the station is on the surface alongside the L.N.E.R., but immediately descends again into tunnel. The position of the up L.N.E.R. line made it impossible to have a crossover there, and, after unloading passengers, trains had to run forward and reverse at one at Drapers Fields, Leyton. (This has now been removed, after the extension of the tube train service to Leytonstone in May, 1947). The signalling is the usual Underground standard with two-aspect stop signals and train-stops and repeater signals.

Signals LDX491 and LD1 (see plan) had telephones (since removed) for communicating with a shunter's cabin near the crossover, the points of which worked automatically. The starting signal A.489, which the colliding train passed at danger, had no telephone. Passing signals at danger was regulated by the L.P.T.B. Rule 55 (g) which reads as follows:—

When a Driver finds an automatic stop signal at Danger he must bring his train to a stand and, if a telephone is provided at the signal, communicate at once with the Signalman and act in accordance with his instructions. Should he receive instructions to pass the signal at Danger he must give one long whistle and PROCEED CAUTIOUSLY as far as the line is clear or to the next stop signal in advance AT SUCH A SPEED AS TO ENABLE HIM TO STOP SHORT OF ANY OBSTRUCTION THERE MAY BE, **having regard to the prevailing conditions, such as curvature of line, weather, etc.** If the telephone is out of order, or a telephone is not provided at the signal and the Danger indication is not changed, the Driver must wait one minute or other prescribed period, give one long whistle, and then proceed cautiously as above directed.

Note.—A train ahead, an obstruction on the track, a broken or misplaced rail may be the cause of an automatic stop signal being at Danger.

* * *

Where telephonic communication between them is available, the Driver must inform the Guard that he is about to pass an automatic stop signal at Danger in accordance with this Rule, and must state the identification letter and number of the signal.

The Course of Events

The origin of the stoppage of trains in the tunnel was the safety-side failure of the electro-pneumatic train stop at signal LD.1 soon after 10 a.m., the arm remaining up in the tripping position after the signal cleared to green, due to faulty operation of a valve, probably caused by particles of grit from the air pipe, not an uncommon trouble in a new installation. The motorman of the fifth train ahead of No. 31, No. 21, reported the failure, which is announced by the red light in a signal remaining showing after the green appears, and was instructed to pass the signal. The two following trains, Nos. 10 and 25, were similarly delayed, and then a lineman travelled with the next, No. 14, and quickly put matters right. This train had waited at Stratford until signal A.489 cleared, and was further delayed at signal LDX491.

While it was standing there, train No. 5 passed signal A.489 at danger and stopped in rear of it, following it when it moved on and telephoning from the signal for instructions. Told to wait while the signal cleared, the driver did so, and had nearly reached signal LD.1 when traction current failed as a result of the collision. Train No. 31 also passed signal A.489 at danger and was stopped about 70 ft. in rear of train No. 5, but did not follow it immediately it moved on. The motorman was releasing his brakes to do so when the collision occurred.

When No. 18, the colliding train, arrived in Stratford Station, signal A.489 was at danger and the guard was told by the station staff that there was a signal failure. He informed his motorman of this. An Executive Assistant, on the Signal Engineer's staff, who had seen trains passing the signal and who telephoned for information regarding the failure, decided to go to signal LD.1 himself, and, taking two assistants with him, joined the motorman in his compartment, travelling himself on the extreme right, after explaining that signal LD.1 was the faulty one and telling the motorman that it would be in order to pass A.489 under Rule 55 (g). After passing the signal and releasing the brakes, after the resetting of the trip cock, the motorman re-started the train slowly, switching off power before entering the tunnel, at which time he thought that speed had risen to 10 or 15 m.p.h.

They seemed to the Executive Assistant to be travelling too fast, and he reminded the motorman, as they reached the tunnel, that they might find the preceding train stationary at any point. This was corroborated by one of the assistants, but the motorman had no recollection of it, though he said he braked as soon as he got into the tunnel. Shortly after, the Executive Assistant and one of his colleagues saw the train ahead, before the motorman could do so, and called out, estimating the distance between the two trains as 80 to 100 yds. They did not regard the speed as excessive or expect there would be difficulty in stopping in time. Even when he realised that a collision was inevitable, the Executive Assistant was not alarmed; all he expected was something similar to a rough shunt. The motorman saw train No. 31 almost immediately after the others and said he then applied the brakes fully.

Though he estimated the distance between the trains was by that time no more than 20 ft., he expected to stop clear. He did not think his speed was over 10 m.p.h. He was surprised that he did not stop; he had no complaint of the action of the brakes. He was quite prepared to find a stationary train somewhere, but rather surprised to do that so near to Stratford.

There was some conflict of evidence as to an admission by the motorman to this effect made while the men were waiting to be released. The Executive Assistant said that his colleague, who was dead, when released asked the motorman why he was going so fast, and the latter replied: "I did not expect to find one here.' Though the other assistant heard the question he was not sure whether it was answered, but the motorman had no recollection of it when asked about it at Colonel Woodhouse's inquiry.

Brake Tests

The conditions were reproduced in tests made for Colonel Woodhouse on January 26, 1947, with a train in the position occupied by No. 31 and a test train identical with No. 18. From the right-hand side the electric tail-light became visible at 242 ft., where the oil light also was well in view. The latter came into view from the motorman's side at 181 ft. These points were marked, the stationary train sent away, and then two more runs made to ascertain stopping distance after emergency brake application at the marks. The train was started from the point where it

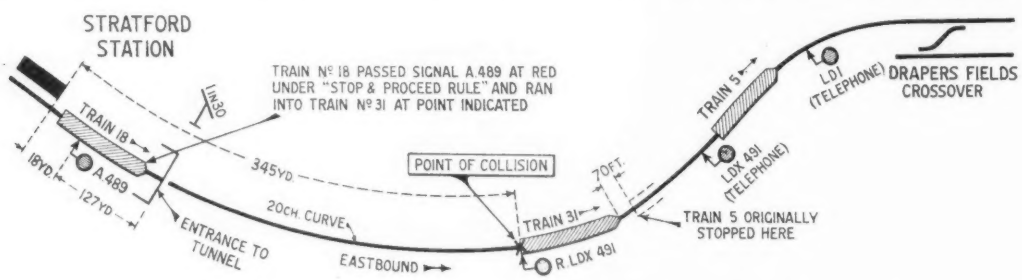


Diagram showing circumstances of collision at Stratford, Central Line, L.P.T.B.

stopped after tripping at signal A.489 by applying power only long enough to get it well on the move. It was allowed to coast unchecked, and attained a speed of 25 m.p.h. where the marks were reached, when an emergency brake application was made. When this was initiated at the first mark, where the Executive Assistant had caught sight of the train ahead, the train stopped in 202 ft., or with 40 ft. to spare. From the point where the motorman could have seen the obstruction it stopped in 204 ft., overrunning the point of collision by 23 ft. No skidding was perceptible, though there was a sensation that rate of deceleration lessened shortly before the train came to a stand, due to the automatic reduction of brake pressure with the speed.

It was noticed that the tunnel lights seen in perspective tended slightly to delay recognition of the stationary train and its lights. It was impossible to establish with certainty whether they were alight at the time of the accident, but balance of evidence was to the effect that they were not burning until just after it, following automatic switching on by the traction short circuit. They had been continuously alight for some days previously, during the trial running made to accustom motormen to the line.

View of one of the damaged coaches after the accident

Inspecting Officer's Conclusion

This accident was due to the motorman's failure to exercise the caution prescribed by Rule 55 (g). It may be that he had not appreciated the steepness of the gradient, or his speed, as he passed into the darkness of the tunnel, but his failure to act immediately on the warning given, coupled with the brake tests, show that his judgment was seriously at fault. Colonel Woodhouse suspects that he wrongly assumed there might be one train between him and the next stop signal, but not more. Responsibility must lie with him. He is 43, with 16 years' service and an unblemished record. He was a guard from May, 1933, to September, 1946, when he was passed for motorman's duties. Though his regular employment as motorman began only two months before the accident, Colonel Woodhouse is satisfied that he had been properly trained and had adequate opportunities to acquaint himself with the characteristics of the new line.

Remarks and Recommendations

In its essential features this accident closely resembles those at Northwood and Harrow, where the mistake was made of travelling too fast under "stop and proceed" conditions. This method of operation is a necessary feature of the Board's signalling system, under which, unlike that of the main lines, where automatic signals are relatively few and widely spaced in comparison with installations dealing with intense traffic, most of the closely-spaced signals work automatically and there are few signalmen to give instructions to motormen. Hence there is no reasonable alternative to the procedure laid down in Rule 55 (g) whereby automatic signals at danger may be passed cautiously after a prescribed wait, on the motorman's initiative.

The instructions in the rule are clearly worded and emphasised by special type, but this series of accidents arising from non-observance suggests the need for continually reminding motormen, in any suitable way, of the risks run if prescribed procedure is not scrupulously observed. Colonel Woodhouse recommends that the Board be asked to consider how this best can be achieved and report in due course what action is to be taken.

At the inquest the jury added a rider to its verdict to the effect that illuminated speedometers ought to be provided and that not more than one authorised person should be allowed to travel with the motorman.

The latest tube stock was originally equipped with electrical speedometers of simple design, but Colonel Woodhouse was informed that they proved unsuccessful. There was trouble with the electrical parts, which were of light construction. It is hoped that a pneumatically operated pattern will give better results. It must be borne in mind, however, that speedometers are primarily required for the guidance of motormen running normally, to enable them to comply with speed restrictions. Their limitations make them of less assistance at very low speed, demanded by Rule 55 (g). That rule requires a sharp lookout, not only for a stationary train, but also for other possible obstructions or track defects which may have held a signal at danger. This is far more important than reference to a speedometer to check the actual speed at which the train is moving.

There was no suggestion in the present case that the motorman was hampered in any way by the presence of three other men or that idle conversation with them diverted his attention. The evidence indicated that very few words were exchanged. Colonel Woodhouse does not feel called on, therefore, to make any recommendation as to the number of authorised persons to be permitted to travel with the motorman, especially as in a variety of circumstances it may be expedient for more than one man to accompany him.

All-Motor Trains for London Transport

(*Concluded from page* 648.)

cars, outside indication lamps will be fitted to facilitate the detection of a car with an open door, either by the guard or by the platform staff. Existing door-engine control valves will require modification to provide the standard door cut-out facilities on motor-cars of eight-car trains, whereby either end doors or all doors can be prevented from opening should the driver fail to make an accurate stop.

Loudaphones of the standard type used by the Board will be fitted for communication between guard and driver; and the driver's compartment will be provided also with a new type of speedometer operated by a fan driven from the traction motor shaft.

Except for the provision of the new spring-borne retractable shoe gear (similar to that being fitted to new "R" stock non-driving motor-cars), which will be undertaken by the Gloucester Railway Carriage & Wagon Co. Ltd., all necessary bogie modifications will be carried out at the Board's Acton Railway Works prior to dispatch to the car builders. These include the fitting of new motor axles, complete with roller suspension bearing units, the fitting of motor nose brackets, and the modification of the existing brake cylinders already mentioned. New traction motors, identical with those to be fitted to the new "R" stock non-driving motor-cars, will be mounted on the bogies at the Board's depot after the converted cars are returned from the car builders' works.

G.W.R. and Southern Railway Lecture & Debating Societies.—On December 11, at the Clerical Dining Club (4th floor, Down Parcels Office), Bishop's Bridge Road, Paddington, commencing at 5.45 p.m., a debate will be held by the G.W.R. and Southern Railway Lecture & Debating Societies on "Should First Class Travel be Discontinued?" The mover will be Mr. J. R. Turk (Chief Accountant's Office, S.R.), supported by Mr. N. R. F. Geiger (Chief Goods Manager's Office, G.W.R.). The motion will be opposed by Mr. H. L. Wilkinson (Office of the Superintendent of the Line, G.W.R.), supported by Mr. J. M. Leighton-Bailey (Staff Training College, S.R.).

25th Anniversary of the G.W.R. Staff Association

Sir Felix Pole's Tribute to Mr. E. Hadley

On December 7 this year the Great Western Railway Staff Association will reach the twenty-fifth anniversary of its inception. This society was the first of its kind on British railways. Today it has 137 branches, many with meeting rooms and institutes, at stations throughout the line, and its total membership is more than 41,000. The society was originally called the G.W.R. Social & Educational Union, but was given the simpler name of Staff Association ten years ago.

A pleasing little story lay behind the conception of this society. During service in the first world war, a soldier who was previously a G.W.R. goods clerk at Evesham, was walking in the desert of Mesopotamia when he saw, half-buried in the sand, what looked like tickets. He picked them up and found they were three bus tickets that had been issued by the Great Western Railway. He was thrilled by discovering on them the name of "his" railway, and he carefully kept the tickets until his return to England. The next day, a Sunday, he took them to the home of the then Editor of the *Great Western Railway Magazine*, Mr. Edward Hadley, and handed them to him.

The incident, though trivial in itself, appeared to Mr. Hadley to have a deep significance, as it disclosed a warm sentiment born of attachment to one's "own" company. From meditating on this during the day, Mr. Hadley had the idea of forming a society that would express and develop the Great Western "family spirit" among the whole of the company's employees. Its aim would be to provide all kinds of mutual interests—sports, pastimes, social events, and "helping-hand" arrangements—free from all distinctions of grades or departments. Thereupon, he wrote an article for the *Magazine* giving an outline of his ideas and inviting the opinions of readers. This produced an avalanche of approval and a great many offers of support and co-operation.

The next step was to seek the company's official consent to proceed with the project; but here came a disappointment. The scheme was objected to, for reasons that were only too sound and apparently insurmountable. The trouble was this: At that time there was a 40-year-old G.W.R. Temperance Union, which had about 100 branches and a membership of 10,000.

During its career this Union had obtained from successive sympathetic Boards of Directors a great many concessions, such as time off from work with pay, and free travel to central assembly places, for branch delegates to attend their monthly, quarterly, and annual meetings. These concessions were costly and often inconvenient to the company. If the proposed new society were formed, it would certainly expect, and could not fairly be denied, similar privileges, and it simply would not be practicable for the company to double the cost and inconvenience that the existing concessions entailed. Thus, from the official point of view the proposal was unacceptable, and the scheme had to be dropped.

Later, however, Mr. Hadley hit on a strategic plan for overcoming the obstacle. At the next annual meeting of the Temperance Union, at which delegates from all the branches were present, he addressed the gathering on the lines that, although 40 years previously there was a need for a movement to suppress intemperance among railwaymen, that need no longer existed. Times had changed; intemperance had been eliminated from among the employees. Thus, the Temperance Union had fully accomplished the work it had set out to do; and now it should advance with the times, change its name and its scope, and go forward as a social and educational movement. In other words, it should convert itself into the very society that he had been seeking to create. If this were done there would be no occasion for duplicating the existing concessions.

This proposition caused some consternation among the teetotallers, but it was decided to print the address and to send copies of it to all the branches of the Union for the members to vote for or against the proposal. The subsequent voting showed an overwhelming majority of members in favour of the scheme. On the strength of this, the Executive Council of the Union decided to effect the transformation, and the Social & Educational Union was inaugurated in the general meeting room at Paddington on December 7, 1922, by the company's Chairman, the late Viscount Churchill.

In tribute to his having conceived and founded the Society, Mr. Hadley was given membership ticket No. 1, and the Executive Council presented him with a specially-made silver case to hold it.

Sir Felix Pole was the company's General Manager at the time the Union was launched. He did much to help and encourage its development, and has continued to take an interest in its progress. Recently, in connection with the annual flower shows of the Reading and Highbridge branches, the respective committees approached him to donate cups for competition prizes. In complying with the requests, Sir Felix deemed the 25th anniversary to be a fitting occasion to honour the originator of the society, and he had the cups inscribed: "Dedicated to Edward Hadley, the founder of the Staff Association." Mr. Hadley retired from Great Western Railway service in 1937. He is 72 years of age.

British Transport Commission

Memorandum to railway staff

Sir Cyril Hurcomb, Chairman of the British Transport Commission, and Sir Eustace Missenden, Chairman of the Railway Executive, have issued a joint memorandum for the information and guidance of all officers and staff of the main-line railways as to procedure during the period beginning January 1 next. This points out that in accordance with the provisions of the Transport Act, 1947, the main-line railways, with the other railway undertakings, specified in Part I of the Third Schedule to the Act, will vest on January 1, 1948, in the British Transport Commission. The Commission will become the owner of the undertakings and will be responsible for the direction of policy.

The Commission, by a scheme made under the provisions of Section 5 of the Act, will delegate to the Railway Executive all powers necessary to enable the Railway Executive to manage, operate, and maintain the railway undertakings on its behalf, and the Railway Executive will become the employer of all officers and staff of the railway undertakings.

For the purpose of giving effect to the provisions of the Transport Act, considerable changes in the present railway organisation will be necessary, but these changes will be introduced by stages in accordance with the policy laid down by the British Transport Commission. As from January 1, 1948, the railways will, in the first instance and as a provisional measure, be organised in the following regions:—

(1) The London Midland Region, corresponding to the system of the L.M.S.R. company in England and Wales.

(2) The Western Region, corresponding to the system of the G.W.R.

(3) The Southern Region, corresponding to the system of the S.R.

(4) The Eastern Region, corresponding to the Southern Area of the L.N.E.R.

(5) The North Eastern Region, corresponding to the North Eastern Area of the L.N.E.R.

(6) The Scottish Region, corresponding to the Scottish systems of the L.M.S.R. and the L.N.E.R.

Some further sub-division and also adjustments of boundaries of the regions in England and Wales will also be made as the organisation develops.

For the time being, each Region will be placed under the general supervision of a Chief Officer, who will hold the title of "Chief Regional Officer," and detailed instructions as to their future responsibilities will be given direct by the Railway Executive to each Chief Regional Officer and to the Chief Departmental Officers of each Region.

It is intended that, as from January 1, the administration of minor railways and joint lines will be merged in that of one or other of the Regions specified above, or in that of the London Transport Executive (corresponding to the present undertaking of the L.P.T.B.).

Detailed instructions will be issued to those concerned.

All railway officers, with the exception of Chief Officers and any others to whom direct instructions are issued, will, as from January 1, continue to exercise their present functions, and their responsibilities to their departmental chiefs or supervisors will remain unaltered.

The main ancillary activities of the main-line railway companies, such as ships, and for the time being docks and hotels, will remain under the management of the Railway Executive. Accordingly, the foregoing paragraph will apply to all staff employed in such ancillary undertakings unless and until instructions to the contrary are given.

There will be no alteration in the management and operation of superannuation, pension, and other provident funds at present. Where necessary, appointments will be made to reconstitute the committees in cases where nominees of the former companies have ceased to act. Applications hitherto made to the directors under the rules of these funds will be made to the Railway Executive.

The existing conciliation procedure and other machinery governing staff and employment relations will remain undisturbed during the interim period. Where new regions have been constituted, for example, in Scotland and in respect of the English portions of the system of the L.N.E.R., existing arrangements with regard to promotion and redundancy will

continue to apply until new schemes and conditions have been negotiated and agreed with the trade unions concerned.

Stationery will be headed:—

THE RAILWAY EXECUTIVE
London Midland Region
Western Region
Southern Region
Eastern Region
North Eastern Region
Scottish Region
} as the case may be.

In the interest of economy this alteration will generally be effected on existing stationery, so long as supplies are available, by means of over-printing.

A PERSONAL MESSAGE

The Commission and the Railway Executive fully appreciate the difficulties which railway men and women of all grades are experiencing in the operation of the railways in this time of stringency and stress. They know that magnificent work is being done and will continue to be done by all sections of the staff to serve the travelling public, and to meet the needs of industry. Railway men and women are rightly proud of the great traditions built up by their companies in the past. The Commission and the Railway Executive desire not merely to maintain those traditions but to strengthen and unite them under British Railways.

Questions in Parliament

Oil-Burning Locomotives

Commander A. H. P. Noble (Chelsea—C.) on November 17 asked the Minister of Transport how many locomotives would be converted to oil burning between now and the end of the year, and in the next six months, respectively.

Mr. J. A. Sparks (Acton—Lab.) also asked the Minister of Transport what steps were being taken to speed up the conversion of locomotives on the four main-line railways from coal burning to oil in view of the fact that the necessary storage installation equipment would be completed by the end of February, 1948.

Mr. L. J. Callaghan (Parliamentary Secretary, Ministry of Transport): Ninety locomotives have so far been converted, and three more will be dealt with by the end of the year. The actual rate of conversion must depend on the supplies of fuel oil.

Commander Noble: Will the Parliamentary Secretary give an assurance that this conversion is still being proceeded with?

Mr. Callaghan: Yes. The railways have done a lot of the work on the ground, but we do not want the conversions to outrun the supplies of oil.

Mr. F. J. Erroll (Altrincham & Sale—C.): As the Minister of Fuel & Power has said there will be sufficient fuel oil available for all the conversions, why is there all this delay?

Mr. Callaghan: Well, I am not the Minister of Fuel & Power.

Major Quintin Hogg (Oxford—C.): The Parliamentary Secretary soon will be.

Reservations of Sleeping Berths

Mr. H. W. Butcher (Holland with Boston—Lib. Nat.) on November 17, asked the Minister of Transport how many first class sleeping berths had been reserved on an average every week between the Munich crisis and the outbreak of war; and why it was necessary to reserve an increased number at the present time.

Mr. R. R. Stokes (Ipswich—Lab.) also asked the Minister of Transport, why 910 first class sleeping berths every week were reserved for business and professional men travelling on behalf of the Government; and whether he would now take steps to abolish these priorities.

Mr. L. J. Callaghan: No priority berths were reserved before the war, and the system was introduced in December, 1941, when the demand outran the supply. A check for the month ended November 8 shows that 89·5 per cent. of all sleeping berths are used by the public, the balance being taken up by business and professional men. Members of both Houses of Parliament, Civil Servants and the Service departments. The Minister of Transport intends to review the present arrangements with the British Transport Commission.

Mr. Butcher: Is it not time that we reverted to the normal practice of allowing everybody to have free access to sleeping berths?

Mr. Callaghan: Not as long as demand exceeds supply. I think there is a case for some control.

Mr. Stokes: Does the Parliamentary Secretary mean these priorities are going to be abolished? Is he aware that the whole of the sleeping car system is very unsatisfactory at the present time? There are mysterious second lists which nobody understands, and there is a considerable black market being conducted in the whole business.

Mr. Callaghan: As I said, we are going to review these arrangements with the British Transport Commission. I am not wholly satisfied with them. On the other hand, there has been a great deal too much blackguarding of people using these reservations by those who have interests to serve.

Coal-Oil Conversion

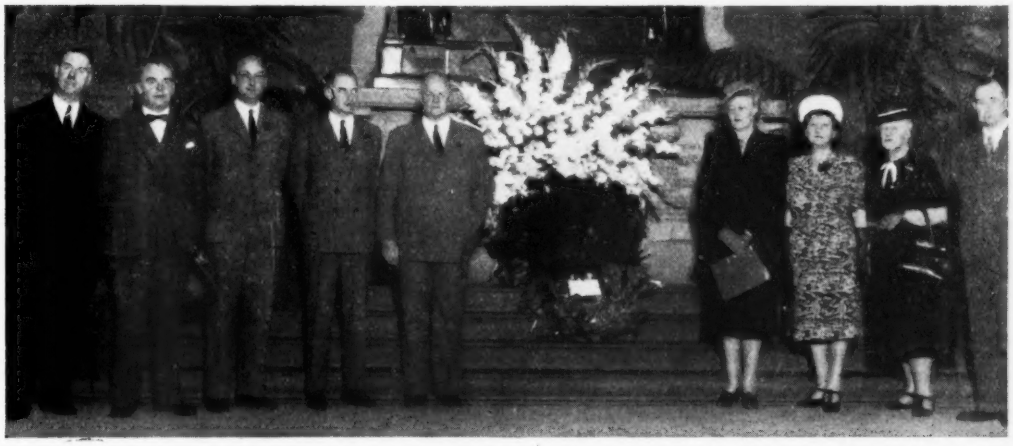
Mr. J. A. Sparks (Acton—Lab.) on November 10 asked the Minister of Supply what steps were being taken to expedite the supply of equipment for storage installation in connection with the conversion of railway steam locomotives to oil burning; and what degree of priority was allocated in supply.

Mr. George Strauss (Minister of Supply) in a written answer stated: The highest priority is given to the programme for coal-oil conversion of the railways. It is estimated that supply of the necessary storage installation equipment will be completed by the end of February next year.

Mr. J. A. Sparks (Acton—Lab.) on November 10 also asked the Minister of Supply what progress had been made in the coal to oil conversion programme of the steel industry; and how much coal had so far been saved.

Mr. G. R. Strauss stated in a written answer: The approved programme is about half completed. It is estimated that approximately 400,000 tons of coal have so far been saved.

Armistice Eve Ceremony at Retiro Station, Buenos Aires



Group after laying of wreaths on Central Argentine Railway war memorial on November 10 (see page 641). Left to right; Mr. E. Myatt, Traction Superintendent C.A.R.; Mr. F. B. Lowry, General Manager, B.A.P.R.; Mr. F. P. Miller, General Assistant to Traffic Manager, C.A.R.; Colonel K. Stirling-Wyllie, Chairman, Buenos Aires No. 1 Branch, British Legion; Mr. W. A. Pickwoad, Managing Director, C.A.R.; Mrs. W. A. Pickwoad, Mrs. Robert Flack, Mrs. D. M. MacRae, Mr. Robert Flack, Deputy General Manager & Chief Accountant, C.A.R.

Notes and News

L.M.S.R. Stock Balances.—A balance of the London Midland & Scottish Railway Company's 4 per cent. debenture stock will be struck at the close of business on December 11.

Experienced Designer Required.—An experienced designer in electrical machine design for traction application is required by an electrical engineering firm in the Midlands. See Official Notices on page 659.

Wellington Grey & Bruce Railway.—Estimated earnings of the Wellington Grey & Bruce Railway Company for the half-year to December 31 will admit of the payment of £3 14s. 1d. per £100 of 7 per cent. bonds. For details, see Official Notices, page 659.

Colonial Engineering Service.—Civil engineers, preferably not more than 35 years of age, are required for the Way & Works Department of the Government Railway in the Malayan Union. Candidates should have had sound experience of civil engineering work as applied to railways, both construction and maintenance. See Official Notices on page 659.

L.N.E.R. Stock Balances.—On December 11 balances will be struck in respect of the 3 per cent. and 4 per cent. debenture stocks, and 4½ per cent. sinking fund debenture of the L.N.E.R. in connection with interest payments for the half-year ending December 31. The interest will be payable to persons registered in the company's books on December 11.

Two Assistant Engineers Required.—Two assistant engineers, not more than 35 years of age, are required for the railway department of the Gold Coast. Candidates should have had experience of civil engineering as applied to railways, both construction and maintenance, and for preference some practical experience in harbour maintenance. See Official Notices on page 659.

Collision near Farnborough, Southern Railway.—A collision occurred between Fleet and Farnborough, Southern Railway, on November 26, when the 12.15 p.m. express from Ilfracombe ran into the rear of the 3.5 p.m. from Bournemouth West, which was stationary. Two passengers were killed and five were detained in hospital, most of the casualties being in the rear coach of the Bournemouth train which was wrecked; two other coaches in this train also were damaged. The engine of the Ilfracombe train was overturned. All four lines were blocked, and main-line trains for the West Country and Bournemouth lines were diverted between Basingstoke and Weybridge *via* Reading and Virginia Water.

"Pattern for Progress."—A film entitled "Pattern for Progress" has been made by Technique Film Productions Limited for Richard Thomas & Baldwins Limited, showing the complete processes of making steel sheet and tinplate at their Ebbw Vale works. The film begins with an animation sequence which gives a thumbnail sketch of the processes in steel making before showing details of the works. The Ebbw Vale plant takes the basic materials of coal, iron ore, and limestone, and converts them into a wide range of flat steel products; the film shows the way in which this is achieved with sequences on coke ovens, the blast furnace, melting shop, the hot mill, cold-reduction mill, Melingriffith tinning, assorting bay, electrolytic tinning, packing and dispatch. All the characters shown in the film are actual operatives employed at the plant, and the film is to be shown to workers and staffs throughout the Richard Thomas & Baldwins organisation.

Southern Railway Company.—Balances will be struck on December 10 in respect of interest on the debenture stocks of the Southern Railway Company for the half-year ending December 31.

L.M.S.R. (Extension of Time) Order.—The Minister of Transport has made the London Midland & Scottish Railway (Extension of Time) (No. 2) Order, 1947 (S.R. & O. 1947 No. 2394). Copies of the Order may be obtained from the Clerk of Stationery, Ministry of Transport, Berkeley Square House, Berkeley Square, London, W.1, price 1d. (post free, 2d.).

Paris International Trade Fair.—The Foire de Paris (Paris International Trade Fair) of 1948 will be held from May 1 to 17. Last year there were some 9,000 exhibitors, a record figure since the inception of the fair. Intending exhibitors from Great Britain are advised to send in their applications as early as possible. The necessary form and all particulars are obtainable from the London representative of the Foire de Paris: Miss Lambert, 14-15, Rugby Chambers, 2, Rugby Street, Holborn, W.C.1 (Tel. Chancery 6794).

False Sleeping Berth Reservation.—A man was fined £10 and £10 10s. costs at Clerkenwell on November 20 for attempting to obtain a sleeping berth reservation in precedence of earlier applicants. The prosecution stated that three clerks in the inquiry office at Euston, L.M.S.R., had been dismissed for previous irregularities in this connection. The defendant came to the office and inquired for certain clerks who had been dismissed. He was dealt with by the chief clerk, to whom he said that he would "see him all right" if he was fixed up with a sleeper, and suggested that if there was a cancellation, he would travel in a false name. The defendant was told to return the next day. When he did so, the chief clerk, acting in accordance with instructions, said he could fix him up, whereupon the defendant handed him a £1 note in addition to the reservation. It was explained during the proceedings that the suggestion of travelling in a false name was made with the idea that if a cancellation was made, it would not be recorded, and another person might travel in the name of the passenger who had cancelled his reservation.

Leopoldina Railway Debentures.—The board of the Leopoldina Railway Co. Ltd. regrets to announce that, due to insufficiency of funds, it will not be possible to make any distribution of interest on the 4 per cent. debenture stock on January 1 next. This situation is a consequence of the adverse working conditions operative during the current year. Although gross traffic receipts to date have shown some improvement over those for the corresponding period of the previous year, this has been occasioned by the higher tariff rates which were authorised in September, 1946, and were intended to meet the cost of the higher wages effective at the same time—representing an addition of some £400,000 a year to working costs. In actual fact, the product of the increase in tariffs has failed to meet requirements, due to a falling off in the volume of the more remunerative traffic handled, particularly in recent months. In addition, net results have been affected adversely by the continued rise in the cost of essential materials of operation.

Level-Crossings Closed on London Transport Central Line.—Works on the electrification of the eastern extension of London Transport Central Line have reached the stage where it is necessary to close level-crossings at Eagle Lane, George Lane, and Snakes Lane, in the Borough of Wanstead & Woodford. The Minister of Transport gave his consent under the provisions of the London Passenger Trans-

British and Irish Railway Stocks and Shares

Stocks	Highest 1946	Lowest 1946	Prices Dec. 2, 1947	Prices Rise Fall
G.W.R.				
Cons. Ord.	61½	54½	56½	+ 1½
5% Con. Pref. ...	126½	107	117½	—
5% Red. Pref. (1950)	106½	102½	99½	—
5% Rt. Charge ...	140½	122½	131½	+ 1
5% Cons. Guar. ...	137½	118½	128½	—
4% Deb.	129½	106	121	+ ½
4½% Deb.	129½	107	121	+ ½
4½% Deb.	130½	114	123½	+ 1
5% Deb.	142½	125	133½	+ 1
2½% Deb.	95½	81½	88½	—
L.M.S.R.				
Ord.	30½	26½	28½	—
4% Pref. (1923) ...	64	52½	59	—
4% Pref.	86	75½	80	—
5% Red. Pref. (1955)	105½	97	98½	+ 1
4% Guar.	108½	100	101	—
4% Deb.	120	103	112	+ ½
5% Red. Deb. (1952)	108½	105½	103½	+ 3
L.N.E.R.				
5% Pref. Ord. ...	7	5	6¾	+ ¼
Def. Ord.	3½	2½	3¼	—
4% First Pref. ...	59½	50½	55	—
4% Second Pref. ...	29½	25¾	28	+ ¼
5% Red. Pref. (1955)	104	97	96½	—
4% First Guar. ...	107	98	100	—
4% Second Guar. ...	101	90	94	—
3% Deb.	104	87½	97½	+ ½
4% Deb.	119½	102½	112	+ 1
4½% Sinking Fund Red. Deb. ...	107½	101½	100½	+ 1
SOUTHERN				
Pref. Ord.	79½	70	73	+ 1
Def. Ord.	24	19½	23¾	+ ¼
5% Pref.	125½	107	116½	—
5% Red. Pref. (1964)	115½	106½	107½	—
5% Guar. Pref. ...	137½	119	128½	—
5% Red. Guar. Pref. (1957)	115½	107½	107½	—
4% Deb.	129½	105½	121	+ ½
5% Deb.	139½	125½	130½	—
4% Red. Deb. (1962-67)	113½	104½	106½	—
4% Red. Deb. (1970-80)	115½	104½	108½	—
FORTH BRIDGE				
4% Deb.	109	103	99½	—
4% Guar.	105	102	96½	+ 1
L.P.T.B.				
4½ "A"	133½	120½	123½xd	—
5% "A"	142½	130½	132 xd	—
3% Guar. (1967-72)...	108	98½	98½xd	— 1
5% "B"	128½	117½	119½xd	—
"C"	64½	56½	62½	+ 1
MERSEY				
Ord.	34	30	33½	+ 1
3% Perp. Pref. ...	76	69	71½	+ 1
4% Perp. Deb. ...	117½	103	108	—
3% Perp. Deb. ...	98	81	69½	—
IRELAND*				
BELFAST & C.D.				
Ord.	8½	6	7½	—
G. NORTHERN				
Ord.	41⅞	30½	24½	— ½
Pref.	63⅜	52	38	—
Guar.	97½	78½	72	—
Deb.	107	97½	87	—
IRISH TRANSPORT				
Common	19/2½	16/9	13/1½	— 1½
3% Deb.	107	100	101½	+ ½

* Latest available quotation

OFFICIAL NOTICES

None of the vacancies on this page relates to a man between the ages of 18 and 50, inclusive, or a woman between the ages of 18 and 40, inclusive, unless he, or she, is excepted from the provisions of the Control of Engagement Order, 1947, or the vacancy is for employment excepted from the provisions of that Order.

Canadian National Railway Company

WELLINGTON GREY & BRUCE RAILWAY COMPANY
7 PER CENT. BONDS

NOTICE IS HEREBY GIVEN that the estimated earnings of the Wellington Grey & Bruce Railway Company for the half year ending December 31, 1947, applicable to meet outstanding interest on the above Bonds redeemed up to and including January 1, 1942, will admit of the payment of £3 14s. 1d. per £100 Bond, and that this payment will be applied, as follows, viz.:—

4s. 1d. balance due for Coupon No. 142 due July 1, 1941, and £3 10s., payment in full of Coupon No. 143 due January 1, 1942, and will be made on and after January 1, 1948, at the offices of the Canadian National Railway Company, Orient House, 42-45, New Broad Street, London, E.C.2, England.

The Coupons must be left three clear days for examination.

A. H. CONEYBEARE,
European Secretary and Treasurer

London,
November 29, 1947

London & North Eastern Railway Company

NOTICE IS HEREBY GIVEN that on Thursday, December 11, 1947, Balances will be Struck in respect of the 3 per cent. and 4 per cent. Debenture Stocks and 4½ per cent. Sinking Fund Debenture Stock of the Company in connection with interest payments for the half-year ending December 31 1947.

Interest will be payable to the persons whose names are registered in the books of the Company on December 11, 1947.

W. H. JOHNSON,
Secretary of the Company

Marylebone Station,
London, N.W.1.
December 1, 1947.

His Majesty's Colonial Service

THE COLONIAL ENGINEERING SERVICE

TWO Assistant Engineers are required for the Railway Department of the Gold Coast. Applicants must be British subjects, physically fit and preferably not more than 35 years of age. They must be Corporate Members of the Institution of Civil Engineers or hold an Engineering Degree recognised by that body as granting exemption from Sections A and B of its examination. They should have had experience of Civil Engineering as applied to railways, both construction and maintenance, and for preference some practical experience in harbour maintenance; but candidates lacking this experience may be considered if otherwise well experienced in general Civil Engineering construction and if personally anxious to make a career in railway engineering.

Appointment will be on probation for permanent and pensionable employment. The basic salary scale rises from £510 by annual increments, usually of £30, to £1,000 per annum. A pensionable expatriation allowance varying from £150 to £300 per annum, according to salary, is also payable. Starting salary will depend on age, civil experience, and length of approved war service. Rent of furnished Government quarters varies from £60 to £90 per annum according to salary. Free first class passages provided for the officer, and if married for his wife on first appointment and on leave. Home leave on full pay is normally granted on the satisfactory completion of each tour of 18 months at the rate of 7 days for each month of resident service. Outfit allowance of £60 payable on first appointment if salary does not exceed £720 (basic). Income tax at low West African rates only.

Intending candidates should write at once to the DIRECTOR OF RECRUITMENT (COLONIAL SERVICE), COLONIAL OFFICE, 15, Victoria Street, London, S.W.1, stating age, professional qualifications and brief details of experience.

DESIGNER, experienced in Electrical Machine Design for Traction Application, required by an Electrical Eng. Firm in the Midlands. Housing accommodation provided. Reply details of training and experience to Box 421, 8, Serle Street, London, W.C.2.

RAILWAY MAINTENANCE PROBLEMS. By H. A. Hull (late District Engineer, L.M.S.R.). Valuable information. With much sound advice upon the upkeep of permanent way. Cloth, 8½ in. by 5½ in. 82 pp. Diagrams. 5*s*. *By post* 5*s*. 3*d*.

His Majesty's Colonial Service

COLONIAL ENGINEERING SERVICE

CIVIL ENGINEERS are required for the Way and Works Department of the Government Railway in the Malayan Union. Qualifications entitling applicants to consideration are Corporate Membership of the Institution of Civil Engineers, or Degrees or Diplomas recognised by that body as granting exemption from Sections A and B of its examination. Applicants must be British subjects, physically fit and preferably not more than 35 years of age. They should have had sound experience of civil engineering work as applied to railways, both construction and maintenance.

Appointments will be on probation for permanent and pensionable employment, within the salary scale £560 to £1,120 per annum, starting salary depending on age, civil experience and length of approved war service. Conditions of service include a cost-of-living allowance (present maxima £224 per annum for married officers and £154 per annum for single officers), children's allowances of £98 per annum for the first child and £70 per annum for the second child, free medical attention, outfit allowance of £60 on first appointment, furnished quarters at a nominal rental, free passages for the officer and his wife and children under the age of ten (not exceeding five persons in all) once each way each tour, and home leave on full pay after minimum tour of 3 years.

The above salary scale is that within which the engineer would be first appointed, but good prospects exist, and will continue to exist, for promotion to posts entailing greater responsibility.

Intending candidates should write at once to the DIRECTOR OF RECRUITMENT (COLONIAL SERVICE), COLONIAL OFFICE, 15, Victoria Street, London, S.W.1, stating age, professional qualifications, and brief details of experience.

STEEL STRUCTURES purchased, dismantled and removed. Industrial steel structures re-built, re-roofed and renovated. Steel factory buildings dismantled, re-erected or adapted on other sites.—BELLMAN HANGARS LIMITED, Terminal House, Grosvenor Gardens, London, S.W.1 Sloane 5259.

STANDARD MILITARY RAILWAY BRIDGES. By F. S. Bond. A description of the different types of bridges designed for rapid erection in the field by the Allied Forces, and of the various methods employed in such erection. 28 pages. 9 in. by 12 in.; fully illustrated. Paper cover 5*s*. *By post* 5*s*. 2*d*.

port Act, 1939, for this to be done as from November 30. There are pedestrian subways at Eagle Lane, George Lane and Snakes Lane. The footway across the railway at Marlborough Road also has been closed, and until the erection of a footbridge at this point is completed, pedestrians have to use the subway at George Lane.

Eastern Bengal Railway Company.—It was notified recently that on September 30, 1947, a total sum of £1,157,130 6s. 8d. was invested for providing a sinking fund in respect of the annuities, class "B."

Ferry Service Restoration Deferred.—On account of the strike situation in France, the restoration of the through London-Paris sleeping car service *via* Dover-Dunkerque has been postponed until further notice. As reported in our October 10 issue, the service was to have been resumed on December 1.

Faster Wagon Turnround Campaign.—The Railway Executive Committee has undertaken an intensive publicity campaign in support of the Government's call for a quicker turnround of wagons. Reprints of the statement made by Sir Stafford Cripps on November 18 have been delivered by railway representatives to traders and industrialists throughout the country, either directly or through their associations. This has been followed by the issue of a leaflet, "Keep 'em moving," which summarises the facts of the situation. The Trades Union Congress, the Federation of British Industries, the British Employers' Confederation, and the railway companies are distributing 100,000 copies of this leaflet to organisations and individuals concerned with the handling of railway wagons. Posters have been produced for exhibition on railway stations and at loading bays. Smaller posters, bearing slogans such as "Have no truck with delay" and "Don't keep rolling stock, keep stock rolling," are being exhibited by railway companies at goods stations and yards. The campaign introduces a new and amusing character, the guard of an express goods train, whose gestures are symbolic of speed.

New Uses for Fibreglass.—On December 2, Sir Hugh Chance, Chairman of Fibreglass Limited, explained some of the new developments which were being made in the production and use of fibreglass. Fibreglass Limited was started by Chance Bros. Ltd. at Glasgow in 1930, to manufacture heat and sound insulation products made from fine glass fibres. In 1938 plans were laid to enter the textile field, and to establish in England under licence the processes of the Owen-Corning Fiberglass Corporation of America. The company's resources—both technical and financial—were reinforced by an arrangement under which Pilkington Bros. Ltd. became actively associated with the venture. Sales in the textile field—still mainly confined to electrical insulation products, such as yarn, paper and cloths—have already outrun production capacity, and early in the new year a large extension to the company's textile division will commence operations. In the field of heat insulation, output is now of the order of several hundred tons a week, and plans are in hand to develop several new lines such as super-fine fibres for aircraft insulation, battery separator plates, and impregnated tissue for the protection of fuel-oil pipe-lines.

Forthcoming Meetings

December 8 (*Mon.*)—The Institute of Transport at the Institution of Electrical Engineers, Savoy Place, London, W.C.2, at 5.30 p.m. Henry Spurrier Memorial Lecture by Mr. H. T. Dutfield, M.Inst.T.

December 9 (*Tues.*).—The Institution of Railway Signal Engineers, at Manchester College of Technology, 6 p.m. "Automatic Switching applied to Teleprinter Working," by Mr. D. Shaw.

December 9 (*Tues.*)—The Institution of Civil Engineers, Great George Street, Westminster, S.W.1, at 5.30 p.m. "Present and Future Developments in the Use and Design of Mechanical Earth-Moving Plant," by Mr. J. L. Sturrock and Mr. D. J. Simmons, B.A., Stud. I.C.E.

December 10 (*Wed.*).—The Institute of Welding, North London Branch, at the Technical College, Barking Road, East Ham, E.6, at 7.30 p.m. "Developments in Resistance Welding" by Mr. C. E. Slade.

December 11 (*Thurs.*)—Southern Railway Lecture & Debating Society, at the Chapter House, St. Thomas' Street, London Bridge, S.E.1, at 5.45 p.m. Debate with G.W.R. at Paddington; Motion: "That first class accommodation in trains be discontinued."

December 12 (*Fri.*).—The Junior Institution of Engineers at the Royal Society of Arts, John Adam Street, Adelphi, W.C.2, at 6.30 p.m. "Coronation Scot—A Railway Development" by Mr. R. A. Riddles, C.B.E., M.I.Mech.E.

Railway Stock Market

Stock market business continued on restricted lines, although, British Funds apart, the general undertone has been satisfactory bearing in mind the conflicting factors and views prevailing. The decision to repay in cash the £300 million of 3 per cent. conversion loan on March 1 next gave a temporary fillip to British Funds, which responded to the view that over the next few months this decision must tend to increase the volume of money seeking investment, bearing in mind that the bulk of conversion 3 per cent. is held by Government departments. This was followed by a sharp reaction, news of the £48,000,000 gold sale to the United States coming as a shock, as the market had estimated that only £25,000,000 had been sold last month.

This news emphasised the serious position, which can be checked only by export trade expansion and austerity at home. The austerity plans indicated by the Government's White Paper on capital investment, which will mean big cuts in transport equipment plans, illustrate the almost desperate measures which have to be taken to speed the export drive. It is clear that next year many companies identified with the home market will find their operations drastically curtailed by lack of materials, owing to diversion of the latter to the big exporting industries. So far the stock markets are somewhat bewildered, because of the many uncertain factors, particularly the extent to which home market companies will be able to switch their activities to the export drive.

Now that the 3 per cent. conversion decision seems unlikely to stimulate the gilt-edged market, the City is regarding an interest rate of over 2½ per cent. as inevitable on British Transport stock, bearing in mind the stipulations of the Transport Act. It seems clear that even if a big last-minute rally in gilt-edged stocks were engineered, and Transport stock issued as a 2½ per cent. security, it would be followed by very heavy selling. Some brokers are of the opinion that even with a 3 per cent. interest rate, considerable selling of British Transport stock may develop in the early stages, and they are suggesting that it might be worth while selling home rails now with a view to reinvesting in selected industrial shares.

Nevertheless, this view is not the prevailing one, because it is pointed out that apart from the stipulation that Transport stock must be issued on terms in unison with those prevailing in the gilt-edged market, the Government will be morally responsible for ensuring that immediately after the issue is made the gilt-edged market is not faced with big selling of Transport stock.

It is true, of course, that home rail debenture and preference stocks are still well below take-over levels, but, on the other hand, investment trusts, insurance companies, and other institutional investors have been buyers of home rails, and in many cases the stocks are becoming in very short supply in the absence of selling. The City is uncertain whether announcement of the interest rate of British Transport will be left until January 1 (*not* a Stock Exchange holiday on this occasion), although there are hopes that it will be made earlier. This week the firmness of home rails (which are regarded as a good investment because current market prices are well below take-over levels) has contrasted with the uncertainty ruling in the market for British Funds.

Argentine rails, after earlier small declines, were inclined to strengthen following reports that the U.K.-Argentine financial talks are reaching their final stage. Completion of the latter is expected generally to be followed by immediate ratification of the railway agreement by Argentina. Meanwhile, 4 per cent. debenture stocks of the leading companies are still ten points below their pay-out levels. In recent weeks there has been very little selling of Argentine rails. The drift to slightly lower prices has been due mainly to inactive markets and the small amount of buying in evidence. Unless the rail agreement is not to be ratified by Argentina, which is very unlikely (ratification is confidently expected in responsible quarters), it is clear that the various stocks are attractive bearing in mind the extent of existing discounts to the pay-out levels. Central Uruguay ordinary and second debentures at 24½ and 66 respectively led a reaction in Uruguay railway stocks which reflected fears that the question of acquisition of the railways by the Republic will not arise until the second half of 1948.

Although not holding best levels, shares of locomotive building and engineering companies were mostly higher on balance, with Wagon Repairs 5s. shares up to 23s. 3d. following the raising of the interim dividend from 7½ per cent. to 10 per cent. Beyer Peacock changed hands around 25s. 3d., Vulcan Foundry up to 33s. 6d., while North British Locomotive were 28s. 9d.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1945/46	No. of Week	Aggregate traffics to date: Totals 1946/7	Aggregate traffics to date: Totals 1945/6	Aggregate traffics to date: Increase or decrease	Shares or Stock.	Prices: Highest 1946	Prices: Lowest 1946	Prices: Dec. 2, 1947
				£	£		£	£	£				
South & Central America	Antofagasta	834	23.11.47	64,140	+ 26,130	47	2,046,230	1,584,350	+ 461,880	Ord. Stk.	11	10½	11½
	Arg. N.E.	753	22.11.47	ps.296,500	–ps.21,200	21	ps.7,012,700	ps.6,576,600	+ ps.436,100	,,	17	5	10
	Bolivar	174	Oct., 1947	$105,321	– $9,383	43	$1,073,351	$1,084,538	– $11,187	6 p.c. Deb.	6½	5½	22½
	Brazil	—	—	—	—	—	—	—	—	Bonds	30	26	42½
	B.A. Pacific	2,771	22.11.47	ps.2,500,000	+ps.125,000	21	ps.52,985,000	ps.46,639,000	+ ps.6,346,000	Ord. Stk.	8½	5½	10
	B.A.G.S.	5,080	22.11.47	ps.3,568,000	–ps.100,000	21	ps.69,267,000	ps.68,053,000	+ ps.1,214,000	Ord. Stk.	16	10½	16
	B.A. Western	1,924	22.11.47	ps.1,270,000	–ps.122,000	21	ps.28,999,000	ps.25,379,000	+ ps 3,620,000	,,	19	9½	21
	Cent. Argentine	3,700	22.11.47	ps.3,298,700	–ps. 25,182	21	ps.70,331,960	ps.65,638,507	+ ps.4,663,453	,,	10¼	7½	17
	Do.	—	—	—	—	—	—	—	—	Dfd.	6	4½	11½
	Cent. Uruguay	970	22.11.47	31,517	– 5,929	21	665,156	765,128	– 99,972	Ord. Stk.	8½	3½	24
	Costa Rica	262	Oct., 1947	34,978	+ 4,097	18	128,051	112,213	+ 15,838	Stk.	15	12	8½
	Dorada	70	Oct., 1947	26,800	– 3,300	44	300,900	309,975	– 9,075	1 Mt. Deb.	102½	99½	108
	Entre Rios	808	22.11.47	ps.376,600	–ps.92,400	21	ps.9,152,000	ps.8,802,000	+ ps.350,000	Ord. Stk.	9	5½	10
	G.W. of Brazil	1,030	22.11.47	40,400	– 2,400	47	1,548,200	1,365,300	+ 182,900	Ord. Stk.	26/6	20/–	2½
	Inter. Ctl. Amer.	794	Oct., 1947	$991,778	+ $306,067	47	$10,902,965	$8,710,553	+ $2,192,412	—	—	—	—
	La Guaira	22½	Nov., 1947	$89,353	– $31,165	48	$1,165,247	$1,286,361	– $121,114	5 p.c. Deb.	70	58	81½
	Leopoldina	1,918	22.11.47	54,285	– 7,752	47	3,087,731	2,848,298	+ 239,433	Ord. Stk.	5	3½	12
	Mexican	483	31.5.47	ps.1,464,000	+ps.459,100	22	ps.7,706,200	ps.13,441,600	+ ps.5,220,000	Ord. Stk.	1¾	¾	1
	Midland Uruguay	319	Oct., 1947	18,301	– 680	17	67,875	80,584	– 12,709	—	—	—	—
	Nitrate	382	30.11.47	11,942	+ 4,591	48	206,176	195,019	+ 11,157	Ord. Sh.	83/9	71/3	62/6
	N.W. of Uruguay	113	Oct., 1947	6,092	+ 1,330	17	19,814	22,911	– 3,097	—	—	—	—
	Paraguay Cent.	274	21.11.47	₲68,901	+ ₲7,001	21	₲1,228,858	₲1,279,881	– ₲51,023	Pr.Li.Stk.	78½	60	52½
	Peru Corp.	1,059	Oct., 1947	178,377	+ 25,140	18	696,140	629,700	+ 66,440	Pref.	16½	8½	7
	Salvador	100	Sept., 1947	c78,000	+ c19,000	13	c235,000	c249,000	– c14,000	—	—	—	—
	San Paulo	153½	—	—	—	—	—	—	—	Ord. Stk.	119½	52½	162
	Taltal	156	Oct., 1947	7,855	+ 960	17	24,270	20,155	+ 4,115	Ord. Sh.	22/6	15/3	18/–
	United of Havana	1,301	22.11.47	62,700	+ 18,931	21	1,246,574	1,053,659	+ 192,915	Ord. Stk.	2	1¾	1¾
	Uruguay Northern	73	Oct., 1947	1,320	– 115	17	4,504	5,260	– 756	—	—	—	—
Canada	Canadian National	23,535	Oct., 1947	9,608,500	+ 226,250	44	90,551,500	81,911,750	+ 8,639,750	—	—	—	—
	Canadian Pacific	17,037	Oct., 1947	7,454,250	+ 795,000	44	65,686,250	60,321,000	+ 5,365,250	Ord. Stk.	25¼	16¾	16¾
Various	Barsi Light†	202	Sept., 1947	20,947	+ 5,362	26	159,525	144,900	+ 14,625	Ord. Stk.	123½	111	102½
	Beira	204	Oct., 1947	127,414	+ 36,566	52	1,167,899	950,694	+ 217,205	—	—	—	—
	Egyptian Delta	607	30.9.47	17,756	– 829	26	296,832	309,781	– 12,949	Prf. Sh.	9½	5	6
	Manila	—	—	—	—	—	—	—	—	B. Deb.	75	60	83½
	Mid. of W. Australia	277	Sept., 1947	21,251	+ 2,575	13	58,967	48,624	+ 10,343	Inc. Deb.	85	70	74½
	Nigeria	1,900	Sept., 1947	349,839	– 6,103	26	2,086,405	2,251,155	– 164,750	—	—	—	—
	Rhodesia	2,445	Sept., 1947	643,980	+ 102,833	52	6,787,603	6,174,664	+ 612,939	—	—	—	—
	South African	13,323	1.11.47	1,262,294	– 26,339	31	31,404,543	34,764,173	+ 3,640,370	—	—	—	—
	Victoria	4,774	June, 1947	1,110,647	– 86,014	52	—	—	—	—	—	—	—

† Receipts are calculated @ 1s. 6d. to the rupee